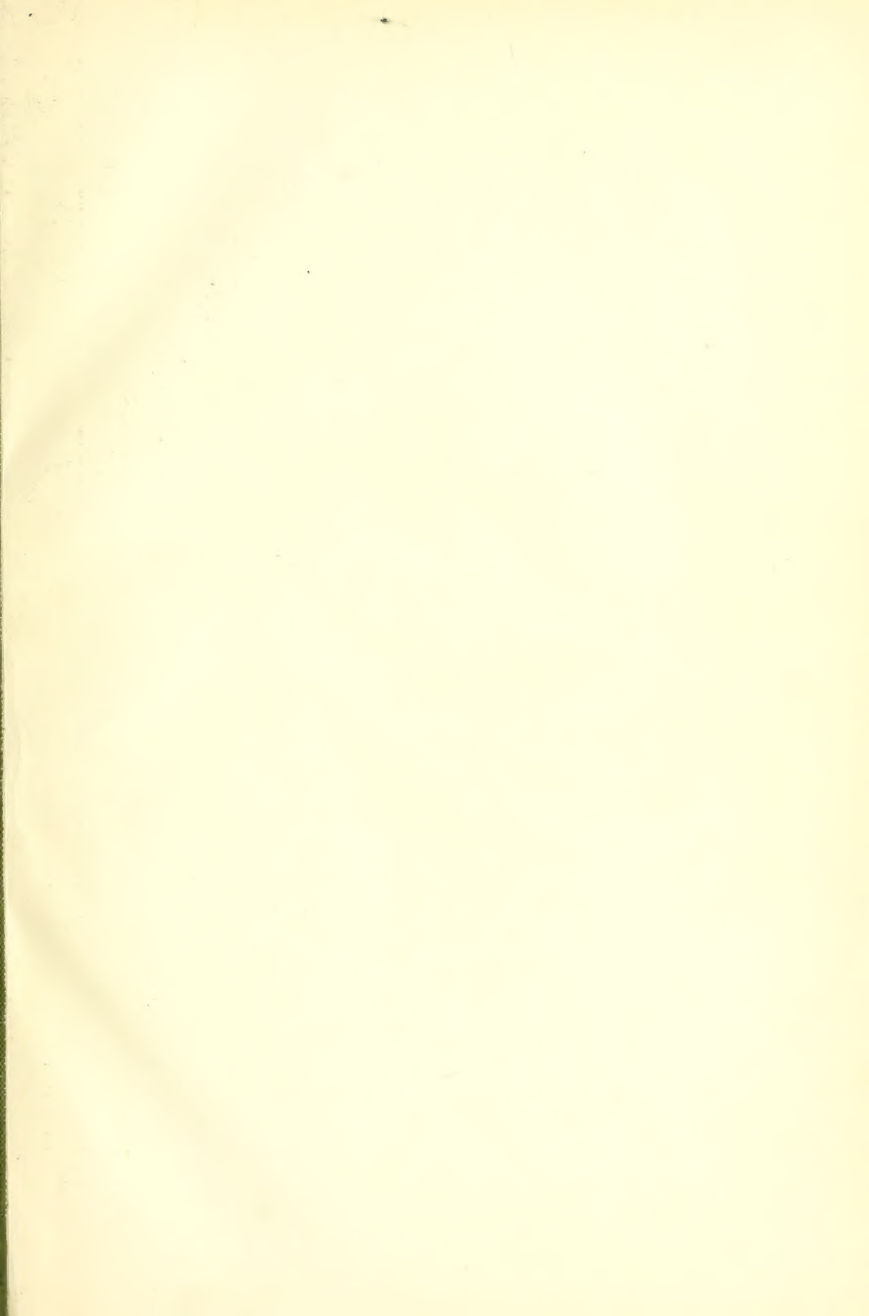
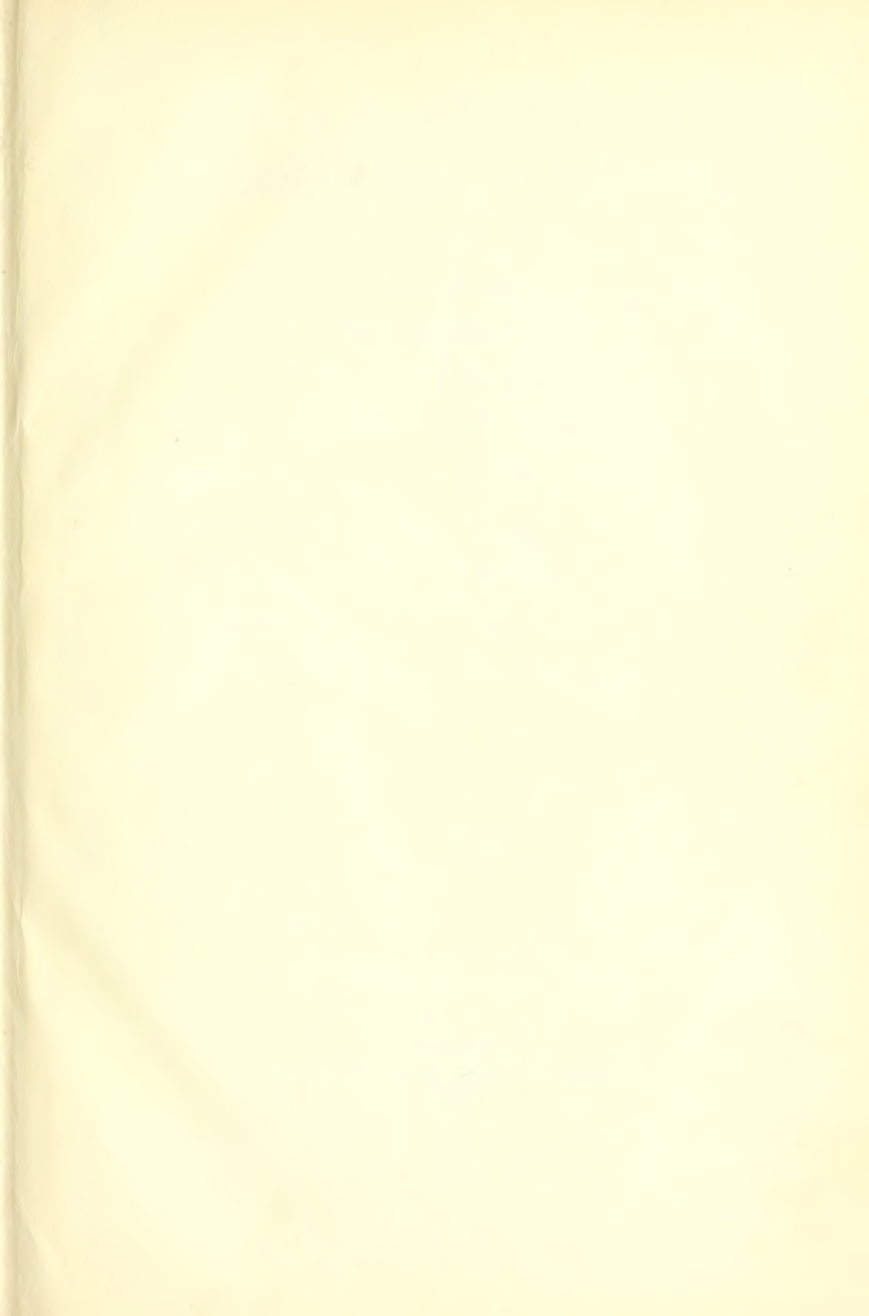


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Education and Research at a Mechanics Institute

President Randall rightly insists that new technical objectives must be integrated with liberal objectives, and that research must supply the new and pertinent elements of broad, sound programs. How this can be done is illustrated in the recent history of Mechanics Institute as here described.

This article and those by Dr. W. W. Charters and Professor Mark Ellingson, which follow, introduce a series of seven, in which Mr. Randall and his colleagues report the successive steps taken during the past several years to ascertain the needs of their educational constituency, and to reconstruct curriculum, content, techniques and administrative practices in harmony with re-defined aims and with specific objectives whose feasibility has been experimentally ascertained.

I. Reconciling Technical, Liberal, Research Objectives

By JOHN A. RANDALL, *Rochester Athenaeum and Mechanics Institute*

THE schools known as "mechanics institutes" offer an extensive and little explored field for educational research. In the period from 1880 to 1900 organizers of teaching programs in these institutes undertook to meet the demand for trade skills, household arts, and applied graphic arts. Practical work in the shop, laboratory, and studio under the direction of a successful craftsman in the field was the obvious and immediately successful teaching procedure. Later the pioneering programs of Pratt, Bradley, Drexel, Rochester, and others contributed experience which greatly aided the public schools to take up work in all of these fields and helped the movement by training

teachers. When state authorities adopted degree requirements in an effort to raise general standards for teachers in these applied subjects, many institutes faced a choice of becoming degree granting institutions or going out of the field of teacher training. The pressure to become standardized colleges had many sources and innumerable subtle forms. Whenever control and management was left to the college trained executive the tendency was to yield to the pressure from alumni, faculty, and other friends of the teacher training program and to evolve into a standardized degree granting institution. For this and other reasons, Carnegie Institute of Technology, Drexel, Bradley, Lewis,

Armour, Stout, Clarkson, for example, are now colleges.

On the other hand, there is another list of schools who elected to drop teacher training and to continue in their original field. In the case of Pratt Institute and of Rochester Mechanics Institute the control was still vested in a board of trustees who believed that loyalty to the purposes of the founders and to the donors of the endowment demanded that the resources of the institutes should be devoted to the direct service of those who seek education outside the college. Their founders were inspired with a desire to save the next generation from the bitter economic struggle which they had known. They were not unmindful of the need of youth for both the technical and liberal instruction. They were, in their day, leaders in an adult education movement.

The wartime Student Army Training Corps and the post-war Rehabilitation Veterans Training Program interrupted the day programs of the institutes more than they did the colleges. The rapid changes in the techniques of production, transportation, distribution, and finance increased the need for instruction of new as well as old followers of occupations in these fields but at the same time destroyed the old classifications of trades and professions. The public schools have undertaken to give trade instruction and have found the problem elusive. Employers have established programs for specific training on the job. In contrast, the offerings of the college,—typically of the engineering college,—tend to become more and more general in practice and in phi-

losophy of education as applied to them.

These mechanics institutes have had an unbroken record of success in evening instruction for adults. This success has not been effected by parallel offerings of free public evening sessions, the Y. M. C. A., the Y. W. C. A., the J. Y. M. A., the K. of C., and other evening sessions.

Since the war, there has been an increasingly insistent questioning as to field, policies, objectives, techniques, and accomplishments in each of these institutions. Two reports have been published,—“A Study of Technical Institutes” by Wickenden, for the Society for the Promotion of Engineering Education, and “From No Man’s Land to Leadership” by the Survey Committee of Franklin Union. Several conferences have been held and two extensive studies made of the program of Rochester Mechanics Institute: the first by a commission consisting of Dr. Dexter S. Kimball, Dr. Frederick P. Keppel, and Mr. Channing R. Dooley; the second by a committee of the Industrial Management Council of the Rochester Chamber of Commerce.

The Wickenden Report and the Franklin Union [Boston, Mass.] Report both emphasized the experimental function of privately endowed institutions. At a conference at Rochester of executives representing eight institutes, in November 1922, there was agreement that these institutes were suffering from an inferiority complex, partly due to the pressure to conform to college standards. These feelings are strengthened by the facts that the field is so large, the objectives differ

widely, the diversification of program is great, and there are few simple, natural ways of mutual support.

In the Wickenden Report the attempt was made to simplify the study by limiting it to full time day courses of one or more years' duration in the technical fields of mechanics, electricity, and chemistry. Within this limited section of the Institute field it was possible to gather valuable statistical data concerning the school plants, courses, methods, faculty, students, alumni, and many constructive findings as to field, techniques, past performance, and opportunities were drawn from the data.

The Franklin Union Report sought a more general evaluation through a qualitative record of individual student cases through which the personnel methods and guidance service of the Franklin Union were emphasized.

The literature contains attempts to define the field of these institutes, discussion of the educational philosophy supporting work in the field characteristic of these schools, descriptions of courses and administrative procedures and their past success. In spite of this there has not been created a total combination of these into a unified, recorded, accepted educational program and policy under which the issues of survival shall be settled independently of the personal equation of key trustees and operating executives.

The importance of the contribution made by the Wickenden and Franklin Union Reports should be emphasized. Wickenden stated: "The needs of the country could scarcely be met by less than 250 institutes, and seem to call for the creation of a great chain of

community institutions having an organic place in city and state educational systems, yet free to achieve their own distinctive character." And further, "The function of the independent, endowed technical institute resembles that of the endowed college or university in many respects. It has been almost a rule in American experience that private initiative has been quicker to recognize neglected areas of education and to occupy them than public authorities. . . . The independent schools are then able to capitalize their freedom for experimentation with curricula, teaching methods, and selective standards of admission, and to strive toward ideals of special excellence rather than the largest enrollments or most inclusive service. . . ."

Here and elsewhere, Wickenden then points out that after observing successful private demonstrations the public institutions step in to carry on the work.

The Franklin Union Report also placed great emphasis upon the pioneering function of the technical institutes. (Chapter Four, Section I, a).

As these two and other studies have been carried on it has become increasingly clear that a demonstration of no single idea, project, theory, or hypothesis will settle the basic issue of the place of these institutes in American education.

It is not enough to name them "Technical Institutes;" they will not survive if they do less than give a balanced program of liberal and technical training to mature the capacities to engage in all the activities of balanced living.

It is not enough to call the field of any

one of these institutes vocational education; to say it trains for industry; to differentiate the type of employment of graduates as line rather than staff; to divide professional occupations into two classifications and assign the training of one classification to the institutes.

It is not enough to say that the institute should undertake to help each applicant toward his farthest north—to help “forgotten” youth out of “No Man’s Land” (Franklin Union Report).

It is not enough to say that the Institute appeals to the unstandardized student, the “off trail” student (Charters), to the financially underprivileged student, to the motor-minded rather than the book-minded student, to those in need of personal guidance, vocational guidance, or both, to those whose conscious and initial demands are for training in the activities of gainful pursuits and whose best development will presently require matured capacities for independent scholarship.

What many people have been trying to do without success during the last dozen years is to find a simple phrase and title with which to define the broad field. This holds whether the phrase or title is proposed to give a name to these institutions, or to define the characteristics of its student body. Moreover, it holds if we go beyond the scope of the illustrations given above for attempts to define or comprehensively describe the institutes in terms of the differentiated techniques and differentiated methods. There remains the slower and more laborious alternative of presenting the field and mission as a whole and reviewing the

techniques in such fashion as to enrich the picture of the whole.

This series of articles has been planned as a contribution to such a broader attempt at definition and description. In stating the dimensions of the field of the institute and in setting up a statement of the mission or aims and in developing its techniques, the dimensions must be broad enough to include consideration of a long list of proposals. From time to time one or more of the institutes has been called upon to:

- make work experience more educating;
- emphasize the democratic ideal of a free path from the bottom to the top;
- contribute to equality of opportunity;
- emphasize the value of a start as a tradesman;
- make a start in the trades as socially approved as a start in white collar jobs;
- emphasize democratic rather than aristocratic ideals and traditions;
- co-operate with industry to make co-operative training programs between employers and schools more effective;
- capitalize the will of employers to aid the training of youth;
- aid in destroying grounds for class feeling in industry and commerce;
- aid a program of providing officers of industry from the ranks;
- establish both a readiness to function in a sphere of initiative and full adjustment to the sphere of standardized conduct;
- furnish a quality competition to the standardized college system;

care for the individual student and let our scholastic "standards" and our reputation for scholastic achievement care for itself;
 reduce the volume of "propaganda" in the classroom and text materials;
 adopt a policy of local rather than national service;
 get authoritative duty analyses from employers;
 use positive incentives and eliminate the pass-mark unit bookkeeping method of standardized schools and colleges;
 select content to intensify both liberal and technical instruction;
 record performance in a way to support positive incentives;
 integrate student activities with the total program;
 secure the conscious co-operation of the teaching staff in the guidance of each student;
 break down the logical departmental organization of faculty courses in the interest of teaching students rather than subjects.

The quotations from both the Franklin Union Report and the Wickenden Report suggest the central conclusion for which convincing support is supplied by the history of these institutions and by the general history of education in this country: *These institutes must be research and demonstration centers doing work of a more basic creative type, of a more clearly defined pioneering character than they have yet exemplified.*

In practical detail this means a body of administrative policy appropriate to the mission of these institutions; it means a distinctive set of

curricula; it means a reorganization of curriculum content and methods especially adapted to the requirements of the institution and carried out in complete detail, including distinctive text material for instruction, teachers' guides, and specialized equipment; it involves a distinctive morale in the faculty and the student body; and finally it involves an understanding on the part of the public of the distinctive mission of the schools and the propriety of their inner organization and procedure. The evolution of any institution like the Rochester Mechanics Institute to conform to this definition and type is a continuous process; it involves continuous study, research, and support.

The Board of Directors throughout the history of Mechanics Institute have held the creative point of view. This has expressed itself with greater emphasis in recent years both directly in decisions of the board and in the administrative policies and decisions of the management of the Institute.

Over a period of years conscious attention has been given to evolving the policies and instruction content and methods in a direction oriented to this and other traditions and also responsive to current needs. These current needs involve both direct service to Western New York youth and the total requirements for survival in its field.

The traditions of some of the schools in the field are not adequately recorded. The meaning of some of the most stimulating records made by leaders and benefactors who have passed on are greatly enriched by conference with friends and acquaintances

who because of relative youth had first an observer's rôle and later a responsible initiative in the building of these traditions. Due in part to the critical value of this unrecorded factor and in part to a tenacious belief in the same ideals, the guidance of chairmen and other members of the Board of Directors of Mechanics Institute has been the most consistent force holding the Institute in its field. This is equally true of Pratt Institute and probably others. Moreover, because of understanding of the spirit of these traditions, board members have proven the strongest advocates in securing additional financial support.

The deepest desires of the founders and benefactors, as they faced the close of their active careers, was to give everlasting life to their ideals of educational equality of opportunity and universal service to all who seek growth through education. Our best traditions call for a loyalty to the spirit behind the documents which record these several benefactions and the desires motivating them. If these living benefactors were interested in giving educational opportunity to a wider group than the three or four per cent who go to college, is it not necessary to raise the question of fidelity to a trust with those who would apply the funds to other purposes, even the highly worthy cause of college education? When living philanthropists plan their disbursements, will not their confidence be strengthened in educational institutions generally if they find undeviating loyalty to the earlier commitments?

Since many of these directors and

benefactors are also employers of students and graduates they have direct information of the general morale and character of the beneficiaries of this education. Thus the results as well as the objectives pass in review before their eyes and deficiencies in the records, in part at least, are compensated for.

For these among many reasons the approval of the Board of Directors has been sought in advance for the program of research and development at Mechanics Institute and the program has been kept within the limits approved by them as it has advanced. These limits provide generous freedom to pursue any of the objectives, aims, and values listed above.

Within these limits new aims and new curricula are being developed, new techniques in guidance and character education are evolving, teaching methods are being selected to speed up the achievement of our aims, our record system is being revised, and the total program is moving to a consistent unity.

Into this general situation Dr. Charters was introduced in 1928 in the capacity of consultant in curriculum building and the research essential to it. Succeeding articles by Dr. Charters, Dr. Tyler, and faculty members will report features of the work. As these detail features are read, the fact should be kept in mind that there is a total program in formation to which each feature will make its contribution. A new institute is evolving from the old. The new institute has the undiminished confidence of the Board, the Faculty and the Student Body, be-

cause it seems to each of them to be continuing to carry out its traditional and its imperiously needed function.

That these functions are typically American in character and make a basic contribution to industrial and national life, is a thesis which is submitted without further expansion or support in this introductory article.

Integrity on the part of all officials connected with these institutes requires the application of all available resources to the pursuit of the institute's special mission. Thus at least two primary conditions of survival are being met. These institutes, and through them their pioneering creative work must carry on.

II. Selecting Institutional Objectives

By W. W. CHARTERS, *Bureau of Educational Research, Ohio State University*

THE objectives of an educational institution are the product of three factors—social needs, student interests, and institutional facilities. An institution has no valid reason for existence if it does not contribute to a more efficient society. For this purpose public schools are supported by the state which holds that more or better, doctors, teachers or citizens should be trained for social service. In the United States at least, the state provides funds to supplement the tuition of students and give them more training than their fees will purchase. Indeed, in the elementary and the high school the state provides a complete system of free education and in the colleges and universities charges only a nominal fee, constituting from 15 to 30 per cent of the per capita cost. This support is based upon the assumption that the state will profit by a citizenry that is literate and intelligent upon general matters of social concern and efficient in performing technical services for the citizens of the state.

The same factor operates in private schools. Here intelligent citizens of

wealth, or a mass of private citizens, combine to provide endowment, buildings and funds for current expenses to supplement the fees of the students, on the assumption that to provide these funds is a social responsibility. They believe that the school is a good investment for the community. This is true in spite of the fact that frequently the explicit reason given for supporting schools is to help "deserving boys and girls." Yet while this idea has popular appeal, it is an indubitable fact that the social contributions to these meritorious youths are powerfully in the minds of donors.

An educational institution must, therefore, continuously canvass its social services. Persistent attention is essential because upon many occasions we find today that schools are not utilizing their facilities in the directions which will be most profitable to society. For instance, teacher training institutions are training with increasing momentum too many high school teachers at a time when there is need for better trained elementary school teachers. The institutions which contribute to the oppressive and

disastrous over-supply of nurses should study the factor of social needs and, if they continue educational activities, select social fields in which there are greater needs. Continuous studies of occupational demand are needed so that the supply of trained students may be focussed upon those points where the social need is greatest.

However, the factor of social need must be supplemented by the factor of student interest. To conscript individuals to serve pre-determined social needs is inhuman. Society exists for the well-being of the individual. And the school must bear the individual in mind. This it has done in the past. The state aims through education to help children to make a good living and live happy and intelligent lives. Parents and voting citizens, who comprise the "state," are very conscious of this factor. The parent wants his children to "have a better chance than I had." Citizens living intimately with the children of a community tax themselves that deserving children may be adequately prepared for life. High school graduates are sent to college by parents for the expressed reason that a college education is a good investment.

The custom of helping students is validly based. Its purpose is not so much to help them to economic success as to aid them to develop happy and effective lives, to contribute to society, and to follow their greatest interests. This contribution of the school is of importance equal to its social contribution.

Between the social need, on the one hand, and the student as a prospective servant of the state and an individual

in his own right on the other, stands the educational institution. It cannot train all students for all kinds of social service. Rather it must make a selection to discover which social needs it can best serve. Which it will be able to serve is dependent upon its faculty, its traditions, its plant and its vision. Obviously if a social need is assumed to be permanent, the faculty, the equipment and the students can be assembled *de novo* to meet the need. A new institution can make the social need the major factor to dominate the characteristics of a selected faculty, a constructed plant and an efficient student body. But an institution which has already assembled a faculty and built a plant and which is not convinced that these should be scrapped will study social needs to discover those in which it can with its plant and faculty be of most service. Its objectives are thus very definitely affected by its own facilities.

Thus briefly it is apparent, as stated in the opening sentence, that educational objectives are a product of social needs, student interests, and institutional facilities.

Rochester Mechanics Institute decided in 1929 to study its objectives. It had a plant, a student body, and a community. It was interested in scrutinizing its objectives and checking them against these three factors.

The story illustrating the application of the foregoing consideration is interesting. First the faculty, the president, and the board of trustees decided to re-formulate the general objectives of the school. In this enterprise it was assumed that general objec-

tives are the product of the objectives of each member of the faculty. To compass the objectives of an institution it is necessary to ascertain the aims, ideals and purposes of the teachers and officers in their every day contact with students. Formulated statements by presidents, boards, or teachers in an exalted mood are futile unless they express the daily working objectives of individuals.

Upon this assumption the faculty proceeded to secure from each teacher a statement of the contributions which he believed he was making or should make, through the Institute, to the lives of the students. He was asked to state what he believed his objectives were. Then the statements of individuals were assembled in each department and from these the department formulated a statement of what it believed to be its objectives—the common objectives upon which the faculty were in general accord. This was done in departmental conferences. Thereupon the departmental statements were assembled by the heads of departments and the president in conference to formulate the objectives of the institution. When these had been prepared, referred to departments and revised in conference, they were presented to the Board of Trustees for consideration as the 1930 official statement of the objectives of the Institute. To complete the circuit, the objectives in official form were re-referred to individuals and departments for the purpose of checking departmental curricula and instruction against the objectives with the hope that modifications of subject matter and methods might ensue.

Once these general objectives had been determined the faculty proceeded to analyze them in terms of plant facilities, social needs, and student interests. To that end they first and quickly made a plant analysis. The analysis revealed equipment, a faculty and a student body devoted to educational activities in the fields of electricity, chemistry, mechanics, architecture, foods and nutrition, retail distribution, and fine art. These were the divisions of the institution with reasonably good equipment, effective faculties, and long traditions.

The problem of studying social needs was then attacked. Here the faculty followed the assumption that the field of service of the Institute was local—Rochester and its area of influence. They would not canvass national fields of service; their contribution was to be conditioned by local needs. Such an assumption was valid because the Institute's privilege was to determine whom it would serve; its traditions had emphasized its local institutional character. And while being valid, the assumption greatly simplified the analysis of social needs since the study could be made in intimate fashion by personal interviews and direct examination of the community.

The general objectives of the Institute were thus in effect reduced by analysis to this type: the training of students to fill efficiently certain types of position—to develop a "good" person. This evolution of the objectives from abstract statements of general objectives to specific personal objectives is of great significance because it gives body to the general state-

ments and provides a concrete basis from which to operate. To say that the institution will provide opportunities to boys and girls and serve the community is not so practical as the statement that the opportunity will be provided and the community served by training efficient persons for the positions X, Y and Z. All that remains is to determine the characteristics of efficiency in positions X, Y and Z and to develop those characteristics.

Upon this level the task of defining objectives became that of discovering those areas in which the Institute could best serve the community with the student body, faculty, and equipment then available or obtainable without great additional cost.

Forthwith the faculty of each department began an adventure in exploration in which they used a number of techniques in common. First, they studied the positions which their graduates were then holding, to discover those most frequently held. The faculty validly assumed that those types of position in which graduates, trained in past curricula, had stabilized were theoretically positions for which the training was appropriate. In addition, all major executives in industries and commerce who used persons trained in the several departments were interviewed at length to discover for what positions there was the greatest need in their organizations—positions which the graduates could fill if properly trained, positions which would make good terminal or career jobs for the graduates—ones which they might hope within a reasonable time to fill after they had made good in intermediate positions. This procedure was supplemented by studies

of statistical trends, judgment of co-operative students, and correspondence to observe national trends as a check against local judgment, and by other obvious techniques.

As a result of such analyses each of the seven departments arrived at groups of positions for which they might train their students—some 250 positions in all.

Certain significant results were obtained. It was found in the first place that some of the curricula should be abandoned. The teacher training course in home economics was abandoned because there was an oversupply of teachers in the field and the amount of training required for certification was greater than the Institute was interested in providing under the circumstances. The course for architects was eliminated because Rochester needed very few architects and the need was already supplied from other sources.

In the second place, there was found an extremely urgent need for minor executives below the level attractive to the graduates of engineering colleges and now filled from the ranks. The wisdom of making the work of the school focus upon executive training became more and more apparent as the evidence accumulated. This, so far as the Institute was concerned, was in every sense of the word a discovery. In the Rochester area there were hundreds of positions at this level to which no educational agency had paid any attention.

In the third place the departments discovered new fields to substitute for those eliminated. The department of architecture while finding that there was no market for architects concluded

that the faculty and equipment were well fitted for the training of foremen and the like in the field of building construction. That is, they shifted their objectives and renamed the department. In home economics it was discovered that it was preferable to train cafeteria managers and hospital dietitians in place of the earlier teachers of home economics. Likewise the department of retail distribution was greatly expanded to care for the needs of department stores and other retail establishments.

Finally, it was soon discovered that instead of training for specific positions it was better to train for areas. For instance in the mechanical department four job charts were constructed—one each for the positions of technical supervisor, machine designer, production supervisor, and power plant supervisor. However, these single titles are inaccurate. Each was a cluster of positions which would all be trained for simultaneously. We find that, while the technical supervisor was the basic terminal job, the student was also prepared for the supplementary terminal jobs of tool engineer, chief of testing, and field engineer to the number of ten positions and was fitted to fill 12 “by-product” jobs with such additional experience as he could normally pick up in service. In addition he was prepared to fill any one of eight related intermediate jobs immediately upon graduation. Furthermore, while he was carrying on his co-operative work, the student learned how to perform nine jobs in the industries. In total the student who carried this course of training was prepared to fill any one of forty jobs.

Attention is called to these facts because from them we are justified in drawing two conclusions: when objectives are stated in terms of positions-to-be-trained-for and the definitions of the positions are carefully stated, the positions are more accurately designated as areas; and this is extremely important in this era of industrial development when the advance in technical efficiency ruthlessly eliminates some types of positions and quickly demands other types. By training for areas, time is conserved and the future protected.

As a result of these studies the departments of the Institute set up twenty-four areas and made the effective training of students in these areas the objectives of the institution.

In conclusion these facts may be briefly added. The faculty's analysis showed that effectively to fill positions, certain traits of personality such as dependability, drive, initiative and co-operativeness, were essential. Training in these traits therefore became an integrated part of the course. The faculty also assumed that persons filling positions had many extra vocational responsibilities and interests. These must therefore be cared for in “liberal” elements of a curriculum.

Briefly, the burden of this discussion is the demonstration of a technique by which the conventional abstract formulation of general objectives may be reduced to the level of practical treatment by the use of the concept of personal objectives—the training of persons to perform certain activities and to develop certain traits which can be deduced from the types of position to be filled.

III. Activity Analysis as a Basis for Course Content

BY MARK ELLINGSON, *Rochester Athenaeum and Mechanics Institute*

THE curriculum program of Mechanics Institute calls for activity analyses for the purpose of validating the content of its instruction. The policy of the Institute is to give liberal as well as technical instruction in such order and combination as to facilitate the all-round individual growth of its students, many of whom are registered on the co-operative plan. The problem of limiting the content of courses to essentials is especially acute in co-operative courses, because the period of school instruction is relatively short. It was believed at the outset of the program that activity analysis could be used to validate the content of courses. Obviously, the environment into which the student develops involves duties directly connected with employment as well as extra-vocational and non-technical duties. This report deals primarily with the technical duties, but the Institute has committed itself to the program of analyzing each sphere of activity into which its students are going.

MAKING ACTIVITY ANALYSES

In making the analyses, we aimed to record both the activities which are carried on during the day's program and traits or qualities of personality which a person must possess in order to carry on the activities efficiently. This involves on the one hand activity analysis of each environment, and on the other trait analysis which will be closely related to the activity analysis. The procedure has been followed in connection with the areas which were

revealed by the demand study, described by Dr. Charters in the previous article. The techniques used in the selection and use of traits will be discussed in a later paper.

Activity analyses have been made in nine areas and for twenty-five jobs. Certain procedures were regularly followed in making these analyses. In the first place, all published material concerning the basic terminal job was collected and examined by members of the staff. From this material were drawn descriptions of job duties. Staff members made additions to the list from their own experience in the field. Table 1 indicates the various techniques used by nine departments.

It is interesting to note that previous activity analyses were found in only three of the fields in which Mechanics Institute carried its investigation. These analyses were so fragmentary that it was necessary to use many other techniques to get a list of duties complete enough for our purposes.

In analyzing activities, certain basic principles must be kept in mind to secure an adequate analysis. The first of these principles is that the analysis must be carried to sufficient detail to give the instructor a clear-cut picture of the contribution that his course makes to the performance of the job. This desired clearness results when the analysis is carried to one step above the obvious.

After all available techniques were utilized in collecting a master list of duties, these were grouped according to a functional classification and each

duty was numbered. The advantage of using a consecutive numbering scheme is evident when it is realized may be one so minor as to come at a third or fourth level in an outlining procedure.

TABLE 1

Showing the various methods used in making activity analyses

	RET.	F.A.	C.S.	CHEM.	A.A.	ELEC.	MECH.	FORE	P.T.
Initial list by investigator.....	X	X	X	X	X	X	X	X	X
Diary lists.....		X				X			
Interviews.....	X	X	X	X	X	X	X	X	X
Lists by graduates.....		X		X	X	X			
Working on the job.....	X	X	X	X	X	X		X	X
Observing.....	X	X		X		X	X	X	
Analyses found in literature.....	X	X						X	
General technical literature.....	X	X	X	X	X	X	X	X	X
Analyzing type jobs.....			X	X	X	X			
Check by Rochester experts.....	X	X	X	X	X	X	X	X	X
Check by others.....	X	X	X	X	X	X		X	
Conference of checkers.....		X		X					
Conference of M. I. investigators.....	X	X	X	X	X	X	X	X	X

Ret., Retailing; F.A., Food Administration; C.S., Construction Supervision; Chem., Chemical; A.A., Applied Art; Elec., Electrical; Mech., Mechanical; Fore., Foreman; P.T., Photographic Technology.

TABLE 2

Showing form used in allocating duties to courses

DUTIES OF BUYER	COURSES								
	Merchandising	Planning and control	Color and design	Principles of retailing	Salemanship	Advertising	Economics	Psychology	Merchandise information
1	X			X					
2	X								
3	X								
4	X								
5		X	X						
6		X							
7						X			
Etc.									

that any duty may be referred to individually in the development of curriculum content even though the duty

Typical duties taken from the analysis of the job of buyer are, for instance:

1. Understand and adhere to the merchandising policies of the store
2. Select merchandise according to store policies
3. Follow out store policies in all dealings with manufacturers and wholesalers
4. Gather information needed for buying
5. Study merchandise trends
 6. Watch for new items or lines of merchandise
 7. Study customer acceptance in fashion center and in own city
 8. Study price trends and supply trends for raw products and for commodities
- Etc.

ALLOCATING DUTIES TO COURSES

The next step in the procedure was to allocate each duty under the course where it was to receive major or minor treatment. A useful form developed for this purpose is shown in table 2.

Department members in conference allocated each duty under the course where it was to be treated. Some of the duties allocated to the course in Merchandising, for instance, in the retailing department are:

1. Understand and adhere to the merchandising policies of the store
2. Select merchandise according to store policies
3. Follow out store policies in all dealings with manufacturers and wholesalers
4. Gather information needed for buying
28. Study merchandise coordination plan for store
 33. Analyze buying resources
 34. Evaluate present resources
 35. Decide on relative advantages of old and new, many and few, local, domestic, and foreign resources
 36. Discover new resources
- Etc.

The instructor then took the list of duties which had been allocated to the course he expected to teach and divided the duties among the units of the course. Duties were allocated to units of each course by the same methods used in assigning duties to each course as a whole. The instructor then prepared a syllabus which covered the items of the duty list. To this syllabus was added connective tissue material, in order to weld the course into a coherent whole.

This method of working out course outlines has proven particularly useful for the professional subjects, as they are the ones which lie closest to the activity analysis.

In the case of related subjects or subjects which are essential because they prepare the foundation for advanced technical instruction, the techniques used are slightly different. Obviously, the professional courses are scrutinized to see whether or not there are any prerequisites which must be taught in more elementary courses. Thus a course in Merchandising might require as a prerequisite certain elements of algebra and arithmetic. The elements in algebra and arithmetic would be prepared with specific reference to the unit in Merchandising which utilizes these elements.

CONCLUSIONS

The most difficult task to perform in curriculum construction is to select the materials that should go into the courses. Theoretically, the builder of any curriculum has the whole field of knowledge and experience from which to select. Knowledge and experience have been collected by the race for generations. Some of it has been recorded in the literature and

other parts of it are to be found only in the unrecorded experience of experts in the various fields. How to select properly is, therefore, extremely important, for one may be in danger from two directions: material which should be presented to the student may not be included in the course, and material in the course may not be as useful as other material which has not been included. This problem of selection becomes intensified when time available for class instruction is limited. Such is the case at Mechanics Institute with its three year courses and its co-operative procedures which require that half of the three year period be spent learning the processes in industrial plants.

The techniques of selection are ordinarily those of the unanalyzed opinion of the curriculum builder. If he has had experience in the fields for which training is being given, he is able to make empirical judgments which may or may not be good. If, as sometimes happens, he has had no experience in the field, he is likely to fall back upon the conventional courses whose content is again selected empirically. Use of the activity analysis tends to remedy this defect in that it subjugates content to the criteria of use in the environment in which the subject matter is supposed to be used. Activity analysis gives, in place of pure opinion, a rather detailed picture of the activities that the learner carried on or will carry on. If these activities

are given in sufficient detail, it becomes a relatively easy matter to use them as criteria for selecting the subject matter to be taught. We have not yet reached the point where we can completely substitute for opinion the objective data of activity analysis. There is still an area in which subjective judgment operates, but the important consideration is this: less is to be left to unsupported judgment when we have data from analyses of activities. In addition, judgment is made not upon the course in its entirety but upon units of the course. The instructor is compelled to judge thoughtfully each item which is included and he cannot fall back upon the use of a textbook in its entirety.

The curricula which have been developed from activity analyses at Mechanics Institute have not been in use long enough to give data which conclusively proves the value of the procedure, but it is our opinion that determination of curriculum content by activity analysis offers the following advantages:

- (1) Facilitates the elimination of duplication and superfluous materials.
- (2) Tends to provide greater incentive by virtue of its showing relationship between activities and content.
- (3) Assists in providing stabilized and validated courses even though instructors may change.
- (4) Aids in providing content prepared for a specific vocational objective in contrast to general content.

Suggestion System Operations, 1926-1931

By Z. CLARK DICKINSON, *University of Michigan*

How much wreckage has been wrought among well-established personnel procedures? According to this study by Professor Dickinson, employee suggestion systems in 22 representative concerns have withstood the storm remarkably well.

Annual data are tabulated from the suggestion systems of 26 establishments of 22 companies, 19 of which contributed to a 26-company table for 1925. Four-fifths of these systems are known to have continued operations through 1931, although only 14 companies furnished statistics through the latter year. Most of these systems show increases in number of suggestions submitted, per thousand employees, in 1930 as compared with previous years. The less complete 1931 data show relapses from the 1930 level, in most cases. Percentages of suggestions adopted, and the average payment per accepted suggestion, have not shown any general upward or downward movement.

A PREVIOUS article in this JOURNAL¹ compared the working of the suggestion systems of 26 companies for one year (or the average of several years)—usually 1925. Nineteen of these companies, and three others, supplied similar data for most of the years 1926 to 1930 inclusive, which data were utilized in another article.² Table 1 of the present article gives these latter figures, and in addition gives data from 17 plants for the year 1931. In spite of the rather small number of concerns, and the lack of complete comparability or accuracy in their statistics, the table supplies some quantitative indications as to ef-

fects and trends of suggestion systems, especially during the present era of devastating financial pressure. The articles mentioned, and references cited in them, give further data and discuss various aspects of suggestion schemes.³

¹ The Policyholders Service Bureau of the Metropolitan Life Insurance Company has recently published a bulletin entitled *Employees' Suggestion Systems*, in which reference is made to a study of that subject by James R. Bailey, Wharton School, University of Pennsylvania. Mathewson's revision of Scott and Clothier's *Personnel Management* contains a discussion (pp. 450-452) of "Suggestion Systems a Form of Employee Representation." Mathewson thinks that an employee is apt to be unwilling to reveal an improvement he may discover with reference to his own job, for the sake of a reward, because then the job is likely to be re-timed and he will have to work harder for a given wage than before. No doubt the management's policies and administration as to task- and wage-setting are very important elements in our problem.

¹ Z. C. Dickinson, *Suggestion Systems Compared*. *Personnel Journal*, 1928, vol. 7, pp. 12-17.

² Z. C. Dickinson, *Suggestions from Workers: Schemes and Problems*. *Quarterly Journal of Economics*, 1932, vol. 46, pp. 617-643.

In the following paragraphs I shall confine myself to a few words on the effects of business depression on such systems. These effects may be sought in the mortality record, and in the statistics of operation of survivors.

Of the original 26 companies who supplied data in 1926-27, 19 contributed statistics for 1926-30 to my second table, which contained data also from three companies which had not been approached for the first one. For 1931 I am giving particulars from only 14 companies out of the earlier 29. Here is an apparent mortality of 50 per cent, but the real mortality is very much lower. The system of company No. 7 was discontinued in 1926. That of No. 10 was suspended in 1927 or 1928; and in 1931 a new system was reported to be in preparation at that plant. In 1931 word was received also that the suggestion plan of No. 16 had been discontinued (when, it was not stated), and the system of No. 6, after a long and remarkable record, suspended operations at the end of 1930.⁴ Company No. 23 has not responded to my inquiries since 1926. From the other 24 companies responses were received which indicated that the systems were still operating in 1931, but for one reason or another statistics for all years were not given. In general it is companies which were receiving few suggestions per employee which have not continued to report; the principal exception being No. 17, whose system is probably still drawing 500 or more suggestions per thousand employees. In No. 28 the state of busi-

ness in 1931 was exceptionally bad. All told, only one-fifth of the systems which reported to me in 1926 had been discontinued or even suspended, by the end of 1931 (only one of the discontinuations, moreover, can be attributed definitely to the recent depression); and nearly all the systems of my list which were well "patronized" by employees in the earlier years have been kept going to the present time.

Undoubtedly the mortality among *all* suggestion schemes which were operating in 1928 and 1929 has been very much greater. A vendor of suggestion-system apparatus and advice told me in 1930 that his concern had made installations in some 1,500 companies within a few years; of these, already 50 per cent or more had ceased to buy the periodic supplies and instruction. My 29 systems were in the main selected from the older and more publicized examples; and very likely these companies are also more able and inclined to maintain personnel activities than the general run of businesses. Few, if any, however, avoided a terrific financial stringency during 1929-31. Column 4-a gives, where available, the percentage which the average number of employees in 1930 or 1931 constituted of the average number on the payroll during the preceding year. These fragmentary figures indicate the slackness of trade in these firms during these years; but of course they do not reveal anything about the amount of short time worked by people who remained on the payrolls.

So much for mortality; now what may we discover as to morbidity and health? What sort of activity occurred within the survivor-systems

⁴ This system gave no cash payments for suggestions, but gave "tokens" of jewelry, etc., annually to successful suggesters.

TABLE 1
Comparative data on suggestions in 23 establishments (annual basis)

ESTABLISHMENT NO.	INDUSTRY, LOCATION	SIZE ¹	PERIOD	NUMBER OF EMPLOYEES, AS PERCENT OF PRECEDING YEAR	NUMBER OF SUGGESTIONS PER 1000 EMPLOYEES	PERCENT AWARDED ²	AVERAGE PAYMENT PER AWARD ³	LOWEST AND HIGHEST AWARDS	NUMBER OF SUGGESTIONS PER SUGGESTOR	WOMEN			EMPLOYEE REPRESENTATION
(1)	(2)	(3)	(4)	(4a)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1	Rubber manufacturing, mid-west	Large	1926-29 1930 1931		273 744 264	14 17 21	\$15 18 12 35 14 21	\$2 50-\$500 00		12			Yes
2	Rubber manufacturing, mid-west	Large	1926-29 1930 1931	75	170 197 250	24 24 26	10 61 15 00 8 40	5 00-800 00 5 00-500 00 5 00-100 00		17			Yes No
3	Rubber manufacturing, mid-west	Medium	1930	84	100	10	12 30	5 00-25 00		18			Yes Yes
4-a	Electrical manufacturing, east	Large	1925 1930 1931		160 187 143	22 25 35	5 26 6 85 5 49	2 50-100 00 2 50-100 00 2 50-300 00	2 8	12	1 8	2 3	Yes Yes Yes
4-b	Electrical manufacturing, east ⁴	All plants	1928-29 1930 1931	90	101 213 133	27 28 32	6 00 5 70 5 58	2 50-200 00 2 50-200 00 2 50-50 00		3			Yes Yes Yes
5-a	Electrical manufacturing, east ¹	Large	1926-29 1930 1931	93	294 384 299	33 34 34	15 81 14 45 12 25	5 00-1200 00 5 00-1000 00 5 00-350 00	1 6	15	6 0	4 0	Yes
5-b	Electrical manufacturing, east ⁴	Medium	1926-29 1930 1931		219 392 334	31 29 24	10 09 9 70 10 90	5 00-150 00 5 00-150 00 5 00-100 00	1 8	13	7 0	4 3	Yes Yes
6	Electrical manufacturing, mid-west	Medium	1926-29 1930		1,518 1,818	45 45	No cash No cash	No cash No cash	1 5	42	25	15	Yes Yes

8	Paper manufacturing, east	Medium	1926-29	1,145	28	4 28	2 00-500 00	48	11	11	Yes
			1930	86	15	6 67	5 00 100 00				Yes
			1931	66	410	7 52	5 00-100 00	1 8	9	2 8	Yes
9	Paper manufacturing, east	Medium	1926-29		593	7 87	5 00-100 00	3 5	14	0 6	No
			1930	98	535	9 67	5 00-100 00	3 4	14		
			1931	86	1,298	7 40	5 00-100 00	2 4			No
12	Brass manufacturing, east	Medium	1926	67	34	7 40	5 00-25 00				No
			1930-31	311	32	5 00	2 00-25 00	2 3			No
13	Food manufacturing, British	Large	1927-29	120	31	3 75 ⁶	1 20-73 00		20	19	Yes
			1930	92	147	4 03	1 20-49 00		54	19	Yes
			1931	90	189	3 0	60-49 00		55	20	Yes
14	Food manufacturing, British	Large	1927-29	559	16	4 12	60-486 00	4 0	49	35	Yes
			1930	392	20	3 34	60-145 00	4 0	46	30	Yes
			1931	434	19	2 90	60-170 00	4 0	46	29	Yes
15	Leather manufacturing, British	Small	1926-29	39	40	10 80	24-15 00		50		Yes
			1930	25	27	8 16	24-15 00		50		Yes
18-a	Chemical, east ⁴	Medium	1927-29	540	23	11 00	2 00-1165 00	2 8	32	6 9	Yes
			1930	844	20	13 97	2 00-1000 00	3 2	37	7 9	Yes
			1931	481	29	8 79	2 00-138 00	2 7	31	4 0	No
18-b	Chemical, east ⁴	Large	1927-29	219	38	6 39	1 00-200 00		24	2 4	No
			1930	388	31	5 81	1 00-1000 00	20	20	4 4	No
			1931	317	27	7 37	1 00-1000 00		21	3 0	No
19	Public utility, mid-west	Medium	1926-29	306	27	7 50 ⁷	50-850 00		17		Yes
			1930	300	27	8 75	50-305 00				Yes
			1931	300	25	5 30	5 00-10 00				Yes

¹ "Large" = 5,000 or more employees; "medium" = 1,000 to 5,000; "small" = under 1,000.

² Or, "accepted," i.e., given some sort of cash or honorary award. In some cases the poorer among these are not adopted.

³ Total payments in year, including special and supplementary prizes divided by number of suggestions awarded during the year.

⁴ 4-a corresponds to A-4 in the 1925 data previously published, 4-b covers all plants of this company, 5-a and 5-b are two plants of a single corporation, likewise 18-b and 18-a, 28-a and 28-b.

⁵ Standard of acceptance raised, April 1, 1929.

⁶ All British payments converted into dollars at par rate of exchange in this table.

⁷ Averages for 1926-30 inclusive obtained by adding total of cash awards (initial and supplemental) and of potential value of merit-mark awards, and dividing sum by number of suggestions given either type of award. Minimum cash award is \$5.00, average (1926-30) about \$15.00. For 1931 the figure in Column 7 refers only to cash awards; merit-mark awards neglected.

TABLE 1—Continued

ESTABLISHMENT NO.	INDUSTRY, LOCATION	SIZE ¹	PERIOD	NUMBER OF EMPLOYEES, AS PER CENT OF PRECEDING YEAR	NUMBER OF SUGGESTIONS PER 1000 EMPLOYEES	PER CENT AWARDED ²	AVERAGE PAYMENT PER AWARD RECEIVED ³	LOWEST AND HIGHEST AWARDS	NUMBER OF SUGGESTIONS	PER CENT OF TOTAL EMPLOYEES	PER CENT OF TOTAL SUGGESTIONS	PER CENT OF TOTAL AWARDS	EMPLOYEE REPRESENTATION
(1)	(2)	(3)	(4)	(4a)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
20	Public utility, mid-west	Large	1926-29 1930	97	178 144	17 18	8 95 9 75	\$.50-\$500.00 .50-350.00		10 10			Yes
21	Public utility, east	Large	1931		131	13	11 80	.50-300.00		10			Yes
24	Department store, east	Medium	1926-30 1925		331	17	8.25	5.00-100.00		6			
25	Department store, east	Large	1925 1930		150 ⁸ 86	10 ⁸ 14	2 00 ⁸ 1 30	5.00-200.00 1.00-5.00		67 67			No
26	Life insurance, east	Large	1927-29 1930	104	70	17	4 50	1.00-2.00 2.00-25.00		60			No
27	Machinery manufacturing, British	Small	1931 1929 1930	119	37 20 19	23 34 37	4 09 9 00 8 13	2.00-25.00 2.00-25.00 .60-49.00		60 77 78			No
28-a	Shipyards, British ⁴	Medium	1926-29 1930		2,884 5,613	40 37	3 50 2 55	8 ⁹ .60-15.00		Small Small			Yes
28-b	Engine works, British ⁴	Small	1931		5,430	35	2 13	.60-49.00					Yes
29	Electrical manufacturing, mid-west	Large	1926-29 1930		9	77	33 53	10.00-175.00	1.27	5	0	0	Yes
			1926-29 1930		11 14	83 70	24 83 19 44	10.00-45.00	1.71	5	0	0	Yes
			1930		21	86	15 36	5.00-95.00	1.56	3	0	0	Yes
			1920-26 1930		6 to 10 ¹⁰ 30 ¹¹	17 40	No cash No cash	5.00-50.00	1.09	3	0	0	No
			1931	75 8	65	36	No cash			29			No
										29			No
										27			No

⁸ Estimated.⁹ In 1928.¹⁰ Old system.¹¹ New system. See text.

during depression? The more significant annual variations are shown in Columns 5 (number of suggestions received, per 1,000 employees), 6 (per cent of these given awards), and 7 (average payment per awarded suggestion). These factors are interdependent: a low standard of eligibility for reward will generally encourage a large flow of suggestions and show a high percentage of these adopted or awarded, but such a policy is ordinarily feasible only if the average amount of reward is low. In general, Column 5 contains the index of quantity; Columns 6 and 7 the indices of quality. Some of the changes from year to year which make the annual figures not entirely comparable are indicated in foot-notes to the table. The change in procedure at Establishment 29 in 1930 was one which brought the cost-reduction engineers into direct contact with suggesters, and relieved the latter of paper-and-pencil work. A changing factor which can scarcely be measured is the liberality of reward for a given suggestion. Establishment 19, for example, was obliged to omit the customary supplementary cash awards, so that its average and maximum cash awards became much lower than formerly. Elsewhere, no doubt, most suggestions were commercially worth less in 1930 and 1931 than in 1929; and, moreover, there was increased inducement to the managements to pay out in rewards a lesser fraction of the real commercial worth. In most establishments, however, the average and maximum rewards held up remarkably well through 1931.

The great increase of suggestion-activity at No. 9 in 1931 resulted from a

high-pressure campaign in September, which induced 70 per cent of the employees to contribute suggestions. The average quality of this flood was rather low, but the year's indices of 18 per cent awarded and average payment of \$7.40 are not far below the corresponding figures for previous years.

The fluctuations attributable to these and other variations in intra-plant policies appear to be overshadowed by rather general movements in most establishments in 1930 and 1931. There was a tendency in the former year for a larger harvest of suggestions (per thousand workers) than in the preceding years, without a counterbalancing decrease in quality. In 1931, however, there was some relapse toward or below the former level. (The exceptions are mainly American establishments, in which procedure or computation shifted within the period, or in British plants which had faced depression longer.)

There are good grounds for expecting that numerous layoffs should reduce somewhat the total *absolute number* of suggestions submitted, by reducing the number of potential suggesters; but we should also expect such layoffs to increase the number of suggestions *per worker remaining on the payroll*. The average quality of the working force should be somewhat improved by layoffs, if the less competent workers are laid off first; and moreover those employees who are kept on the payroll, but are obliged to work short time, have a new opportunity and a new incentive to work up suggestions. Operatives not infrequently earn their customary wages or more, by such use of their enforced leisure.

And what inhibiting factors are apparent in a time of depression? Of course the management may readily discourage workers from making suggestions,—most obviously, perhaps, by giving out fewer and smaller payments. In some cases workers may hesitate to put forward ideas which might save labor and thus accentuate the tide of layoffs. But perhaps most important is the contagion of discouragement, which may prevent most people from achievements which would be possible to them in another atmosphere.

All in all, it is rather surprising that the depression has not had a more striking and unambiguous effect on these suggestion systems. Doubtless the effect would have been much more pronounced if suggestions of really far-reaching consequence from common workers, as to labor-saving or improvement of products and methods gener-

ally, were not always so rare. Coincident with this rarity, and quite probably because of it, the total annual payments for suggestions are never large in relation to the wage-bill—one-tenth of one per cent of the latter is rather a high mark. I have argued elsewhere that suggestion schemes seem more important from the standpoint of promoting interest and workmanlike competence in the common employee than from the standpoint of finding significantly new products and methods. On all these counts they are probably more useful to the management in times of prosperity and high labor turnover than in depression, but to a remarkable extent they have been kept in operation in the face of the most imperative calls for retrenchment.

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Measuring Unemployment

In Buffalo and Lincoln

BY FREDERICK E. CROXTON, *Columbia University*, AND CLEON O. SWAYZEE,
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Until the Federal government maintains current inventories of unemployment, local surveys like these of Buffalo, New York, and Lincoln, Nebraska, are indispensable. Relatively inexpensive to make, they reveal the magnitude of the problem of relief.

Actual counts of employed and unemployed by identical methods in selected areas of Buffalo and Lincoln showed more severe unemployment in the larger, more highly industrialized city than in the smaller city. In Buffalo only about two-fifths of the men able and willing to work had full-time work, while in Lincoln nearly two-thirds were fully employed. In nearly every industrial group unemployment was more severe in Buffalo than in Lincoln. Unemployment had also been of longer duration in Buffalo. Both cities showed unemployment more severe for the foreign born than for native whites, and unemployment least for men aged 35 to 40.

THE data here presented represent actual counts made in November, 1932, of the unemployed in two cities widely separated geographically and of quite different industrial composition. Buffalo, with a population of 573,076 in 1930, is an industrial city with much heavy manufacturing, and is located in an industrial area. Lincoln, with 75,933 inhabitants in 1930, has some manufacturing, but is located in an agricultural area.

Because of the labor and expense involved, and in spite of the general desire for factual information, not many enumerations of the unemployed have been made. Even these have generally varied widely from each other

in procedure. In Buffalo and in Lincoln the same method was used and the data were collected as of very nearly the same day. In respect to method, the present studies are outgrowths of a series of five studies made in Columbus, Ohio, from 1921 to 1925.¹ The procedure was modified in some respects in a series of studies of Buffalo, New York, beginning in 1929.² In November, 1931, studies were made in

¹ "Unemployment in Columbus, Ohio, 1921 to 1925" by Frederick E. Croxton, Bulletin 409, U. S. Bureau of Labor Statistics.

² The four studies are compared in *Unemployment in Buffalo, November, 1932*, by Frederick E. Croxton. Special Bulletin 179, Division of Statistics and Information, New York State Department of Labor.

Buffalo and in Syracuse, New York,³ and in November, 1932, studies were made in both Buffalo and in Lincoln, Nebraska.⁴

In neither Lincoln nor Buffalo was it feasible to enumerate the entire population; consequently, a number of areas, believed to represent the com-

TABLE 1
*Industry distribution of all persons enumerated, Buffalo and Lincoln, 1932**

INDUSTRY GROUP	BUFFALO		LINCOLN	
	Number of persons	Per cent of total	Number of persons	Per cent of total
Professional service.....	569	3.7	334	8.8
Clerical (not otherwise specified).....	99	0.6	64	1.7
Domestic and personal service.....	1,063	6.9	448	11.8
Government employees (other than teachers).....	1,278	8.2	337	8.9
Trade and transportation.....	4,659	30.1	1,541	40.7
Retail and wholesale trade.....	1,916	12.4	725	19.1
Telephone and telegraph.....	179	1.2	59	1.6
Railway, express, bus, gas, electric light.....	1,758	11.4	431	11.4
Water transportation.....	100	0.6		
Bank and brokerage.....	190	1.2	76	2.0
Insurance and real estate.....	216	1.4	173	4.6
Other.....	300	1.9	77	2.0
Manufacturing and mechanical pursuits.....	6,548	42.3	659	17.4
Building trades, contractors.....	428	2.8	99	2.6
Building trades, wage earners.....	714	4.6	120	3.2
Clay, glass, and stone products.....	99	0.6	22	0.6
Food and kindred products.....	689	4.5	133	3.5
Iron, steel and their products.....	1,453	9.4	26	0.7
Metal products, other than iron and steel.....	189	1.2	7	0.2
Paper, printing, and publishing.....	309	2.0	110	2.9
Wearing apparel and textiles.....	443	2.9	22	0.6
Automobiles, parts and tires.....	966	6.2	42	1.1
Lumber and furniture.....	310	2.0	35	0.9
Aeroplanes.....	189	1.2	5	0.1
Other.....	759	4.9	38	1.0
Labor (not otherwise specified).....	34	0.2	67	1.8
Self-employed.....	1,059	6.8	260	6.9
Miscellaneous.....	189	1.2	79	2.1
Total.....	15,498	100.0	3,789	100.0

* Does not include 163 persons in Lincoln not reporting as to industry.

³ *Unemployment in Syracuse, November, 1931*, by John Nye Webb. Special Bulletin 173, Division of Statistics and Information, New York State Department of Labor.

⁴ *Unemployment in Lincoln, Nebraska, November 1932*, by Cleon O. Swayzee, Nebraska Studies in Business, 33, The University of Nebraska.

munity industrially, were selected in each city. The enumerators were college students, who were carefully instructed before beginning their house-to-house visits and whose work was carefully supervised. The schedule cards (one for each home visited) were

simple forms asking information concerning relation to head of household, sex, age, race or nativity, present or last regular employer, occupation, employment status, and whether able to work, and willing to work. This applied to all males over 18 (except students⁶) and all females over 18 who were usually employed in gainful occupations. Names were not asked, nor were they wanted, except of those persons found in such wretched conditions that it was deemed advisable to report them to the proper social agency.

It is no longer necessary to plead the value of unemployment data. Guesses must be superseded by facts, social agencies must have some notion of the size of the problem with which they cope, and reasonable bases must eventually be had for a proper determination of unemployment insurance rates. For the first of these uses the data must be promptly available. In Buffalo the figures were collected as of November 4th, and were released to the press December 1st. In Lincoln the data were taken as of November 1st and were available November 22nd.

Table 1 presents the industry distribution of all persons, male and female, enumerated in each of the two cities. A number of striking contrasts appear. In Buffalo 42.3 per cent of the persons enumerated were engaged in manufacturing and mechanical pursuits, while in Lincoln 17.4 per cent were in this line of activity. In the manufacture of iron, steel, and their products, Buffalo shows 9.4 per cent

and Lincoln 0.7 per cent of the persons enumerated. More than six per cent of the persons enumerated in Buffalo and 1.1 per cent in Lincoln were engaged in manufacturing automobiles, parts, and tires. Trade and transportation included 30.1 per cent of the persons enumerated in Buffalo and 40.7 per cent in Lincoln. Lincoln also showed larger proportions engaged in domestic and personal service and in professional service than did Buffalo.

In certain respects the two cities were very similar. The same proportion of persons were engaged in the railway, express, bus, gas and electric light group. Very nearly the same proportions were government employees, contractors in the building trades, or were otherwise self-employed.

EMPLOYMENT STATUS

The employment status of all persons able and willing to work is given in table 2. This and other tables exclude all persons enumerated who were either unable or unwilling to work.⁶ From table 2 it appears that unemployment for both males and females was much more severe in Buffalo than in Lincoln. Likewise Buffalo showed larger proportions employed part time than did Lincoln. In Buffalo just over two-fifths of the men were working full time, while in

⁶ All males over 18 were enumerated in the Lincoln study, but students were separately classified and are not included in this paper.

⁶ Figures for persons unable and unwilling to work are presented and discussed in the complete reports referred to previously. It is of interest to note that Lincoln had a larger proportion of men unemployed because of disability or unwillingness than did Buffalo. This classification included 10.4 per cent of the men enumerated in Lincoln as compared with 4.5 per cent of the men enumerated in Buffalo.

Lincoln nearly two-thirds were fully employed. It is interesting that in Lincoln, where trade and transportation pursuits predominate, the employment status of males and females was not greatly dissimilar. In Buffalo, on the other hand, the two sexes showed

in Buffalo for the four years 1929-1932. The males, able and willing to work, who were unable to find work were:

62 per thousand in 1929
172 per thousand in 1930
243 per thousand in 1931
326 per thousand in 1932

TABLE 2

Employment status of all persons able and willing to work, Buffalo and Lincoln, 1932

EMPLOYMENT STATUS	BUFFALO			LINCOLN		
	Males	Females	Both sexes	Males	Females	Both sexes
	Number					
Employed:						
Full time.....	5,262	1,639	6,901	1,800	666	2,466
Part time.....	2,795	560	3,355	343	148	491
2/3 but less than full time.....	846	141	987	68	23	91
1/2 but less than 2/3.....	1,090	235	1,325	171	58	229
1/3 but less than 1/2.....	464	96	560	35	22	57
Less than 1/3.....	394	88	482	44	32	76
Fraction not reported.....	1		1	25	13	38
Unemployed.....	3,903	750	4,653	563	158	721
Total.....	11,960	2,949	14,909	2,706	972	3,678
	Per cent					
Employed:						
Full time.....	44.0	55.6	46.3	66.5	68.5	67.0
Part time.....	23.4	19.0	22.5	12.7	15.2	13.3
2/3 but less than full time.....	7.1	4.8	6.6	2.5	2.4	2.5
1/2 but less than 2/3.....	9.1	8.0	8.9	6.3	6.0	6.2
1/3 but less than 1/2.....	3.9	3.2	3.8	1.3	2.3	1.5
Less than 1/3.....	3.3	3.0	3.2	1.6	3.3	2.1
Fraction not reported.....	*		*	0.9	1.3	1.0
Unemployed.....	32.6	25.4	31.2	20.8	16.3	19.6
Total.....	100.0	100.0	100.0	100.0	100.0	100.0

* Less than one-tenth of one per cent.

greater differences, due largely to the fact that many men were employed in factories.

Some idea of the severity of unemployment in November 1932 may be had by considering the data collected

The proportion of males unemployed was one and one-third times as great in 1932 as in 1931, and over five times as great in 1932 as in 1929.

Part-time employment, also, showed increases from year to year, though the

increase from 1931 to 1932 was very slight. Of the males able and willing, those who had part-time work were:

71 per thousand in 1929
186 per thousand in 1930
232 per thousand in 1931
234 per thousand in 1932

Since unemployment and part-time employment increased from year to

The proportion employed full time in 1932 represented a little more than one-half of the proportion working full time in 1929.

NATIVITY AND EMPLOYMENT STATUS

Data of employment status of males by nativity groups are given in table

3. Unemployment was most severe in Buffalo among the native colored and

TABLE 3

*Employment status of all males, able and willing to work, by nativity, Buffalo and Lincoln, 1932**

NATIVITY AND EMPLOYMENT STATUS	BUFFALO		LINCOLN	
	Number	Per cent	Number	Per cent
Native white:				
Employed:				
Full time.....	4,242	46.5	1,572	69.6
Part time.....	2,022	22.1	262	11.6
Unemployed.....	2,864	31.4	426	18.8
Total.....	9,128	100.0	2,260	100.0
Native colored:				
Employed:				
Full time.....	50	23.8	21	†
Part time.....	60	28.6	1	†
Unemployed.....	100	47.6	18	†
Total.....	210	100.0	40	†
Foreign born:				
Employed:				
Full time.....	970	37.0	187	49.9
Part time.....	713	27.2	75	20.0
Unemployed.....	938	35.8	113	30.1
Total.....	2,621	100.0	375	100.0

* Does not include 1 male in Buffalo and 31 males in Lincoln not reporting as to nativity.

† Percentages not computed because of small numbers involved.

year, it follows that full-time employment underwent successive decreases. Of the males who were able and willing to work, those who were employed full time were:

867 per thousand in 1929
642 per thousand in 1930
525 per thousand in 1931
440 per thousand in 1932

least severe among native white men. Not quite one out of every three native white men was unemployed, while nearly one out of every two native colored men was out of work. Not quite one out of four native colored men was employed full time, while just under one out of two native white men had full-time work.

Too few native colored were enumerated in Lincoln for the figures to be meaningful for that group. Unemployment was less severe, however,

were out of work. Just over two-thirds of the native white men were fully employed while about one-half of the foreign born had full-time work.

TABLE 4

*Employment status of males, able and willing to work, by age groups, Buffalo and Lincoln, 1932**

AGE	BUFFALO				LINCOLN			
	Em- ployed full time	Em- ployed part time	Unem- ployed	Total	Em- ployed full time	Em- ployed part time	Unem- ployed	Total
Number								
Under 20 years	104	36	203	343	213	83	164	460
20 and under 25	476	224	670	1,370				
25 and under 30	617	302	423	1,342	205	37	67	309
30 and under 35	697	324	386	1,407	218	44	55	317
35 and under 40	827	462	447	1,736	234	30	34	298
40 and under 45	740	446	429	1,615	237	31	57	325
45 and under 50	594	346	389	1,329	209	32	41	282
50 and under 55	484	306	317	1,107	192	36	45	273
55 and under 60	310	170	186	666	110	15	33	158
60 and under 65	228	102	198	528	92	18	36	146
65 and under 70	130	50	154	334	36	6	14	56
70 and over	53	26	101	180	43	11	15	69
Total	5,260	2,794	3,903	11,957	1,789	343	561	2,693
Per cent								
Under 20 years	30.3	10.5	59.2	100.0	46.3	18.0	35.7	100.0
20 and under 25	34.7	16.4	48.9	100.0				
25 and under 30	46.0	22.5	31.5	100.0	66.3	12.0	21.7	100.0
30 and under 35	49.6	23.0	27.4	100.0	68.8	13.9	17.4	100.0
35 and under 40	47.6	26.6	25.8	100.0	78.5	10.1	11.4	100.0
40 and under 45	45.8	27.6	26.6	100.0	72.9	9.5	17.5	100.0
45 and under 50	44.7	26.0	29.3	100.0	74.1	11.3	14.5	100.0
50 and under 55	43.7	27.7	28.6	100.0	70.3	13.2	16.5	100.0
55 and under 60	46.6	25.5	27.9	100.0	69.6	9.5	20.9	100.0
60 and under 65	43.2	19.3	37.5	100.0	63.0	12.3	24.7	100.0
65 and under 70	38.9	15.0	46.1	100.0	64.3	10.7	25.0	100.0
70 and over	29.5	14.4	56.1	100.0	62.3	15.9	21.7	100.0
Total	44.0	23.4	32.6	100.0	66.4	12.7	20.8	100.0

* Does not include 3 males in Buffalo and 13 males in Lincoln not reporting as to age.

among native white men than among foreign born. About one out of five native white men was unemployed, while three out of ten foreign born men

AGE AND EMPLOYMENT STATUS

Table 4 shows figures of employment status by age groups for the males who were able and willing to work.

The percentage data of this table show for each age group the proportion of that group employed full time, part time, and unemployed.

For Buffalo the figures reveal that the proportion unemployed was least among males 35 to 39 years of age, and only slightly higher for the men 30 to 34, and 40 to 59. The greatest proportion of unemployed men appeared in the very young and the very old groups. The greatest proportion of males employed part time was among those aged 35 to 59, while the proportion employed part time was least among the youngest and oldest. Full-time work was enjoyed by about the same proportion of men within the range of 25 to 64 years, while full-time work was least for the very young and the very old.

Data for Lincoln are too meagre among the older groups to warrant any general comparison with the foregoing. Nevertheless it may be seen that unemployment was least for men between 35 and 39 years of age, and that full-time employment was greatest for the same age group and only slightly less for those aged 40 to 54.

INDUSTRY AND EMPLOYMENT STATUS

For brevity table 5 shows, for major industry groups only, the employment status of males in Buffalo and in Lincoln. The striking points brought out by comparisons of individual industries are:

- (1) In every important industry group, except one, the proportion of men unemployed was smaller in Lincoln than in Buffalo. Contractors in the building trades showed a

slightly larger proportion unemployed in Lincoln than in Buffalo.

- (2) In every important industry group the proportion of men employed was larger in Lincoln than in Buffalo.
- (3) With the exception of insurance and real estate, professional service, and domestic and personal service, the proportion of men employed part time was smaller in each important industry in Lincoln than in Buffalo.

Not every industry group can be compared for the two cities, as too few persons are present in some of the industry groups in Lincoln. However, for those which can be compared, the ones which showed most severe unemployment in Buffalo appear also to have been most severely affected in Lincoln. Building trades wage earners and contractors, for example, are unemployed in nearly the same proportions in the two cities.

Comparison of female employment in the two cities yields a similar picture. For the industry groups which can be compared, it appears that more full-time employment, less unemployment, and less part-time employment was found among women in Lincoln than in Buffalo, except in the professional service group.

DURATION OF UNEMPLOYMENT

Table 6 gives the duration of unemployment for those unemployed persons who were able and willing to work. In Buffalo, 60 per cent of the unemployed men had been out of work a year or more and 36.5 per cent had

been out of work two years or more. In Lincoln, 44.3 per cent of the unemployed men had been without work a year or more and 29.5 per cent had been unemployed two years or more. The unemployed women in Lincoln

TABLE 5

*Employment status of males, able and willing to work, by industry group, Buffalo and Lincoln, 1932**

INDUSTRY GROUP	BUFFALO				LINCOLN			
	Em- ployed full time	Em- ployed part time	Unem- ployed	Total	Em- ployed full time	Em- ployed part time	Unem- ployed	Total
	Number							
Professional service.....	197	18	19	234	161	5	12	178
Clerical (not otherwise specified)...	1	1	36	38	4	3	3	10
Domestic and personal service....	328	82	148	558	111	36	33	180
Government employees (other than teachers).....	636	192	249	1,077	187	28	21	236
Trade and transportation.....	1,843	734	883	3,460	840	163	145	1,148
Manufacturing and mechanical pursuits.....	1,590	1,670	2,319	5,579	285	73	201	559
Labor (not otherwise specified)....	4	11	16	31	11	10	35	56
Self-employed.....	653	86	122	861	180	15	14	209
Miscellaneous.....	10	1	111	122	16	2	31	49
Total, males.....	5,262	2,795	3,903	11,960	1,795	335	495	2,625
	Per cent							
Professional service.....	84.2	7.7	8.1	100.0	90.4	2.8	6.7	100.0
Clerical (not otherwise specified)...	†	†	†	†	†	†	†	†
Domestic and personal service....	58.8	14.7	26.5	100.0	61.7	20.0	18.3	100.0
Government employees (other than teachers).....	59.1	17.8	23.1	100.0	79.2	11.9	8.9	100.0
Trade and transportation.....	53.3	21.2	25.5	100.0	73.2	14.2	12.6	100.0
Manufacturing and mechanical pursuits.....	28.5	29.9	41.6	100.0	51.0	13.1	36.0	100.0
Labor (not otherwise specified)....	†	†	†	†	†	†	†	†
Self-employed.....	75.8	10.0	14.2	100.0	86.1	7.2	6.7	100.0
Miscellaneous.....	8.2	0.8	91.0	100.0	†	†	†	†
Total, males.....	44.0	23.4	32.6	100.0	68.4	12.8	18.9	100.0

* Does not include 81 males in Lincoln not reporting as to industry.

† Percentages not computed because of small numbers involved.

year or more and 20.2 per cent had been out of work two years or more.

Of the unemployed women in Buffalo, 54.8 per cent had been out of work

showed 37.8 per cent of their number without work for a year or more and 20.2 per cent out of jobs for two years or more.

TABLE 6

*Duration of unemployment of persons able and willing to work, by sex, Buffalo and Lincoln, 1932**

DURATION OF UNEMPLOYMENT	BUFFALO			LINCOLN		
	Males	Females	Both sexes	Males	Females	Both sexes
	NUMBER					
Less than 10 weeks	404	90	494	134	37	171
10 and under 20 weeks.....	305	79	384	49	20	69
20 and under 30 weeks.....	419	96	515	61	19	80
30 and under 40 weeks.....	230	30	260	24	9	33
40 and under 52 weeks	199	43	242	16	4	20
52 and under 104 weeks	918	189	1,107	123	31	154
104 weeks and over.....	1,425	221	1,646	103	23	126
Total.....	3,900	748	4,648	510	143	653
	Per cent					
Less than 10 weeks	10.4	12.1	10.6	26.3	25.9	26.2
10 and under 20 weeks.....	7.8	10.6	8.3	9.6	14.0	10.6
20 and under 30 weeks.....	10.8	12.8	11.1	12.0	13.3	12.3
30 and under 40 weeks	5.9	4.0	5.6	4.7	6.3	5.1
40 and under 52 weeks	5.1	5.7	5.2	3.1	2.8	3.1
52 and under 104 weeks.....	23.5	25.3	23.8	24.1	21.7	23.6
104 weeks and over.....	36.5	29.5	35.4	20.2	16.1	19.3
Total.....	100.0	100.0	100.0	100.0	100.0	100.0

* Does not include 3 males and 2 females in Buffalo and 53 males and 15 females in Lincoln not reporting as to duration of unemployment.

CONCLUSION

Unemployment and under employment was much less prevalent in Lincoln than in Buffalo, largely due to differences in the industrial character of the two cities. In both cities unemployment was greater for men than for women, and greater for foreign born and for native colored men than for native white men. In both cities unemployment was most severe among men under 30 and over 60 years of age. As far as comparisons can be made, the industry groups affected most severely were much the same for both cities, although Lincoln generally

showed better employment conditions in each group. Unemployment had been of longer standing in Buffalo than in Lincoln. The two cities are alike in that the duration of unemployment was greater for men than for women.

These figures give some indication of the seriousness of the problem of unemployment and under employment. Just what they may mean with respect to so-called "normal" conditions is not yet clear, because comparable data over a period of years are not available. For one indication of a minimum below which unemployment seldom falls we may scrutinize the figures

from the first Buffalo study. The data were collected as of November 4, 1929—just after the stock market break—and at that time 62.0 per cent of the unemployed males, or 3.8 per cent of all males able and willing to work, had been out of work four weeks or more; at least this proportion of

men would appear to have been out of work before the stock market break.

It is hoped that the present studies may be continued and extended to furnish a more complete and more useful body of information.

(Manuscript received March 13, 1933)

Reception of Applicants for Employment

By C. M. NELSON, *Union Oil Company of California*

HOW to handle the large number of applicants for employment is a serious problem to a large Corporation. In 1931, 20,866 applications were received in our Head Office and the present indicated figure for 1932 is about 27,000. Operating on a five-day week, this means at the present time we receive about a hundred applications a day. The difficulties encountered and the methods used by our Company will be discussed from two definite angles, that of the employer and that of the prospective employee or hopeful applicant.

The employer must ask how much administrative expense should be allowed. We decided that everyone should have the privilege of an interview but we could not afford to grant every applicant an interview with a personnel officer. A certain number of applicants we know will be unsuited to our needs, failing in one of the prerequisites for office or sales work, such as a High School training. Other definite groups, such as mechanics and common labor are interviewed directly at our refineries and field offices which are away from Los Angeles. So we have one well qualified receptionist who interviews each applicant and gives him or her an application form. For those who have qualifications that can be reasonably considered to have a chance when the

opportunity presents itself, she arranges an interview with one of the two personnel officers. One personnel officer, a woman, handles the women and one man handles the men. We feel that the cost of this method is well warranted. All applicants are directed to one office where they are received by someone qualified to judge them. We thus relieve the departments, each of which would otherwise have to devote time to this work.

All vacancies are filled from the applicants interviewed by the personnel department. Some selectivity is, of course, always granted to department head who has the position to be filled, but generally our first candidate is accepted.

Each applicant interviewed by the personnel officer is rated on his application form as follows: A = Appearance, B = Personality, C = Ability to sell self, D = Education, E = Ambition, F = Mental alertness, G = Aggressiveness, H = Stability, I = Ability in position applied for.

The standard of rating is as follows:

- 5 = very superior (a rating which is given very few times in a year)
- 4 = well above average
- 3 = average
- 2 = below average
- 1 = negligible

On applications which the receptionist does not consider worthy of an

interview she makes brief pencilled comments, such as, "No high school," "Too old for sales without oil sales experience," "Not our service station type." A complete record is kept of all applications filed, and of all return visits. Applications are thrown away after six months if not acted upon in the meantime. "Policy" applications, such as friends of company employees, stockholders, or business connections are interviewed by the personnel officer or otherwise the usual routine is carried out.

This practice has satisfied our needs as an employer. We may now ask how it appears in the eyes of the applicant. If he is satisfied from the human standpoint, then we feel we have accomplished a double satisfaction which has its direct return in good will and indirectly in sales and advertising.

In our reception room we have the following notice hung so that it can easily be read by every applicant. In the wording of this notice we have tried to express our policy clearly and concisely with the minimum amount of sentiment. We feel it ill advised to express too much optimism to someone who may be desperately in need of work and who may only be embittered by effusiveness.

NOTICE

"We would like you to realize that your application based on ability, will receive as favorable consideration as possible in the order in which it has been filed and that we are very much in sympathy with the hardships with which you may be presented in your present position.

"We feel that we can perhaps help in a small way by giving you, with as short a delay as our facilities permit, the courteous treatment to which you are entitled and

giving you definite assurance that you will be given a truthful estimate of your chances for employment with us and the probable length of time before your application can be enacted upon.

"In this way we feel that you will know how much of your hopes you can concentrate on us and your time will, therefore, not be unnecessarily wasted, and we sincerely hope that you will be located soon and that you can feel the sentiments expressed herein have been carried out in practice."

UNION OIL COMPANY OF CALIFORNIA
UNION SERVICE STATIONS, INC.

Many applicants have told us that their greatest and most frequent discouragement is to have no chance of an interview. They are told either by sign or word of mouth that there is no work.

It has been our set policy to talk to every applicant, to tell them truthfully if they will be employed and their position on the accepted waiting list and as accurate an estimate as possible of the time that will elapse before they are called. If we know that it will be impossible to employ an applicant, we tell him so as carefully as possible, explaining our reasons and telling him that he is being dealt with frankly because we realize his time is precious. We thus allow him to concentrate on those firms with whom he has a better chance. The policies of the organization are outlined and we try to make the reasons of our denial clear and straight-forward.

Many of the younger applicants are glad to receive comments as to their faults and often ask vocational advice. We feel that giving such advice makes friends for the company.

Some applicants are in no position to stand such frankness. With these we have to use discretion for they are

often in desperate circumstances. Calling up other companies for possible chances while the applicant is still in the office gives amazing encouragement. Instruction to keep in touch with us, although stressing that their chances are small, will sometimes save a man from very rash steps.

One is astounded at the amazing optimism and politeness that is so

continually seen from those who one knows have been unemployed for months and have others entirely dependent on them for support. At times it is discouraging to realize one can employ but a small percentage, yet we can obtain a little satisfaction in knowing that all our applicants are honestly and politely treated.

(Manuscript received September 9, 1932)

Making a Rating Scale that Measures

By M. W. RICHARDSON AND G. F. KUDER, *Personnel Research Department, The Procter and Gamble Company*

To the problem of constructing a new and more reliable scale for rating salesmen, a scale on which the units of measurement are known to be equal, the authors have successfully applied the venerable principles of psychophysics.

This paper describes an application of psychological measurement techniques to the construction of a rating scale with real units. The validation of the scale in an industrial situation is an integral part of its construction.

The scale, used for measuring the effectiveness of salesmen in a national organization, is much more reliable than earlier rating devices. Reliability coefficients range from .83 to .90.

GRAPHIC scales for rating ability have been widely used in industry for several years with little or no improvement.¹ The reliability of such devices has never been satisfactory. As Symonds suggests,² no less than eight independent ratings are required to give stable results, assuming that the average reliability coefficient of the graphic scale is about .55. But more than three independent ratings by different superiors is usually impossible in an industrial situation. It is certainly futile, in view of the halo effect invited by the graphic form, to try to increase the reliability by adding to the list of "traits." Unless materially modified, the graphic rating scale will

probably continue to give mediocre results.

As one of several measures to be used as criteria in the construction of a selection test for salesmen, a new rating scale based upon psychological measurement methods was developed. This rating device is made up of statements about the efficiency of the man on the job. Each statement is scaled, i.e., it is given a quantitative value upon a scale with equal units in such a way that the endorsement or refusal to endorse the statement may be interpreted in quantitative terms. The development of such a scale was suggested by two considerations. The first is that informal ratings of men are customarily made by such statements as "He is always on the job," "He needs to be pepped up occasionally," etc. This is, no doubt, the oldest and most natural way of rating men. In the second place, the atti-

¹ Bradshaw, F. F. Revising Rating Techniques, *Personnel Journal*, 1931, 10, 232-245.

² Symonds, P. M. *Diagnosing Personality and Conduct*, The Century Company, 1932, p. 96.

tude scale techniques suggest methods of giving correct quantitative values to statements. Since the method of constructing this scale departs from the attitude scale techniques, it will be described in some detail.

The first step was to collect more than 1000 statements made by supervisors, managers, and trainers to describe the performance of salesmen on the job. These statements were collected from formal and informal reports, comments made on graphic rating scales, etc. They were edited to eliminate duplication, two ideas in one sentence, irrelevance, ambiguity, grossly ungrammatical construction, etc., while still retaining the original flavor and terminology. The editing process yielded 531 statements describing a wide range of ability.

SCALING THE STATEMENTS

The method of Equal Appearing Intervals was used to give preliminary scale values to the statements.³ Fourteen judges familiar with the job requirements were asked to separate the statements, each one of which was on a separate slip, into seven piles representing seven equally spaced degrees of effectiveness on the job. The first pile at the left represented the lowest degree of success (flat, unmistakable failure) the seventh pile at the extreme right represented the highest degree of success; and the five intermediate piles represented evenly-spaced degrees of success on the job. The judges were asked to consider,

"If this statement were made about a salesman, where would he most likely be on this seven-point scale?"

Only those statements were accepted upon which there was close agreement by all the judges. Practically all of the 132 statements retained were placed by the judges in one of two adjacent piles. The scale value given to each statement was the average of the placements, calling the piles 10, 20, 30, 40, 50, 60, and 70 respectively. The statements were selected in such a way as to be fairly evenly distributed throughout the scale.

It would be possible, perhaps, to stop at this point with fair results; we wished, however, to make further tests of each of the 132 statements in actual use. It was felt that scale values of statements might shift in actual use of the scale, even though the original scaling might serve as a satisfactory first approximation. Moreover, we expected that judges might not detect a lack of specificity or precision which would show up in actual use.

APPLICATION OF SCALE

The 132 statements were divided into two forms of 73 items each, fourteen of the items being used in both scales. The latter was done to check the "performance" of the fourteen items in two different scales, used at different times. The two forms were filled out by two to five superiors of each man. One month elapsed between administration of the two forms. Six hundred and fifty salesmen were thus rated. The filling out of the forms was simple. Each statement endorsed was marked (+); each

³ Thurstone, L. L., *The Measurement of Opinion, Journal of Social and Abnormal Psychology*, 22, 415-430.

statement not endorsed was marked (-). Statements in doubt were marked (?).

The two rating forms were separately scored by finding the average scale value of the statements endorsed. For purpose of the check-up and revision, each form was scored by halves, one half containing 37 statements spaced over the scale, and the other half (36) similarly spaced.

ANALYSIS AND REVISION

The next step was to analyze the "performance" of each item as it actually contributed to the measurement of the effectiveness of these 650 salesmen. We set up the following specifications of a good statement:

- (1) The statement must be specific; that is, it must be said only of men of about the same standing in general effectiveness on the job.
- (2) The statement must contribute to the reliability of the scale; or, negatively stated, it must not detract from the reliability of the scale as a whole.
- (3) The statement must discriminate between men of known differences of ability, as measured by the two scales and by an independent rating method.⁴

Each of these specifications was defined as well as possible in terms of operations to be carried out upon the performance of each item. To carry out this statistical check-up, we

⁴ This independent scale was called by us the Paired Rating. It is described in another setting in an article as yet unpublished.

punched on Hollerith cards, besides the item responses (endorsement or non-endorsement), the following measures:

- (1) The score on the form.
- (2) The square of this score.
- (3) The score on the independent rating form.
- (4) The differences between the scores on the split halves of the form (the half-score difference).
- (5) The number of items endorsed.

This required 6 cards for each man, or a total of about 10,000 cards. The two forms were analyzed separately. The machine operations were simple. The cards were machine-sorted into two piles with respect to the response on Item No. 1. One pile containing cards for those on which Item No. 1 was endorsed were counted and simultaneously tabulated upon the five measures named above. Likewise, the other pile (non-endorsement of Item No. 1) was tabulated upon the same measures. This procedure was repeated for each statement.

From the tabulated totals there was computed:

- (1) Average score on total form of those for whom item was endorsed.
- (2) The standard deviation of the scores of the men for whom item was endorsed.
- (3) The average score on independent rating scale of same men.
- (4) The average half-score difference of scores of men for whom item was endorsed.

Corresponding averages were computed for non-endorsement.

To conform to the first specification

named above, those statements with smallest standard deviations were selected. A large standard deviation was interpreted to mean that the statement lacked specificity.

The second specification for a good statement was that the average half-score difference must be as small as possible; moreover, this half-score difference must be smaller when item was endorsed than when not endorsed.

The third specification was checked by using the difference between the average score of those for whom the statement was endorsed and those for whom it was not endorsed as a measure of the discriminating power of the item. The corresponding measure upon the independent rating was also used.

All of the above measures were plotted in separate charts against the tentative scale value. Likewise, the percentages endorsing the statements were plotted against the scale value. Curves were fitted by averaging three free-hand curves drawn from inspection. This procedure enabled us to spot at once statements whose scale values required correction. Fortunately, both the direction and size of the corrections needed agreed in the various charts within the limits of the accuracy of the fitting of the curves.

The specifications described above were applied simultaneously in the final selection of items, but upon items of the same scale range at one time. This latter condition made necessary unequal rigor in the application of specifications demanded, but this was unavoidable.

Fifty-one items were finally retained; twenty-three of these had

slight changes made in the scale values.

THE FINAL SCALE

A part of the final scale follows:

Below are a number of statements that have actually been made about Procter & Gamble case goods salesmen. Read each statement, and put a plus (+) sign before it if it applies to this man. Put a minus (-) sign if it does not apply. Use a question mark (?) if you are not sure.

	Scale Values*
— He is somewhat in a rut on some of his brand talks..	32
— He tends to keep comfortably ahead of his work schedule.....	56
— He is a good steady worker..	46
— He is weak on planning....	29
— He is making exceptional progress.....	69

* Scale values were *not* given in the final form. The rater does not know the scale-values of the statements.

RELIABILITY OF THE SCALE

The score of 330 men upon one form of 36 items gave a Pearson $r = .85$ with the scores upon a form of 36 other items applied a month later. The correlation (estimated by the Spearman-Brown formula) between two forms of 51 items each is $r = .90$. The correlation between ratings of 305 men made by two independent raters was $r = .83$.

The scale as finally developed has the merit of being easy to fill out and easy to score. It is capable of annual revision without destroying the comparability of periodic scores. The consistency of individual raters is easily checked in the personnel office. It is possible, by these techniques or improvements upon them, to develop a rating scale of higher reliability than

those usually used in industrial personnel work.

Such a scale must be developed to fit each specific industrial situation.

The preparation is not excessively laborious if Hollerith sorting and tabulating machines are used.

(Manuscript received August 8, 1932)

Intelligence and Clerical Jobs

Two Studies of Relation of Test Score to Job Held

BY MILLICENT POND, *Employment Supervisor, Scovill Manufacturing Company,*
and MARION A. BILLS, *Assistant Secretary, Aetna Life*
Affiliated Companies

The similarity of findings in these two thorough researches, made quite independently in two different kinds of business offices, strikingly confirms the conclusion that there is a significant and consistent relationship between test scores and advancement in clerical work.

IN THE ordinary course of experimental procedure, particularly in the social sciences, there is often a long interval between the completion of an original experiment and its repetition by a second investigator. When the authors of this article discovered that in two independent investigations having to do with the validation of intelligence test scores in clerical work, they had arrived at similar results, they decided to report the two studies jointly, and to include in their report any conclusions which could be drawn from the double situation. The fields and methods of the investigations were sufficiently different to have given no predetermined assurance that the results would be alike; therefore the agreement is not only an interesting substantiation of the conclusions separately reached, but it also suggests that some of the past insistence on identity of experimental conditions in work of this kind has been unnecessary.

The two companies in which the studies were carried out are probably as different in general organization as any two are likely to be. One is an insurance company, with clerical work occupying the major portion of the time of its twenty-four hundred employees. In this organization there has been considerable centralization of routine work, and in many departments a setting up of actual measures of output. The other is a brass manufacturing company, in which the number of persons engaged in clerical work is only a small proportion of the total enrollment. None of the clerical work had been centralized when the study was made and clerical output had not been measured. The two companies are alike, however, in that neither organization has large groups of clerical employees doing identical work. Also, in both investigations the term "clerical work" had been used in a broad sense to include not only filing, typing, record keeping,

general accounting, planning and scheduling of work to be done, but also the making of independent decisions based upon general company policy, and supervision over the clerical work of others. Although it will generally be conceded that the more routine work is much alike wherever found, the work of the second groups would ordinarily be considered different, since it depends upon technical information in very different fields. The fact, however, that in one instance this technical information is mechanical and metallurgical, while in the other it is in the field of finance and underwriting, does not from a psychological viewpoint make the jobs fundamentally different. In both cases the primary requisite is the ability to utilize certain existing data. In reality, it is probable that clerical work, even thus broadly defined, in organizations which are as different as these two, is fundamentally more alike than clerical and manufacturing work in the same organization.

Both investigations cover six years of accumulation of records, taken at the time of hiring, plus an additional two years for maturation of records. The periods are not identical but overlap by five years. The number studied in the insurance company is very much larger than that in the manufacturing company, but both are large enough for statistical reliability.

The test material used in each study is an adaptation of the United States Army intelligence test, although selection and arrangement of test items are different. The particular adaptation used by the insurance company is Bureau Test VI, that of the manu-

facturing company is the Scovill Classification Test. The test items in the former were taken from the verbal portion of the Army test, while those in the latter came from both verbal and non-verbal series. Bureau Test VI is nearly self-administering, requires twenty minutes total time, and yields a single score. The Scovill Classification Test is given with a blackboard demonstration, and requires thirty minutes. It yields seven scores, but these are less diagnostic than the average of all, therefore only the average is used in this report.

Differences in the criteria used will be apparent in the descriptions of the two studies. In one case the criterion came almost automatically from other personnel records; in the other case the criterion finally chosen came at the end of an extensive search for a practical measure of success.

The joint conclusions of the two studies are as follows:

- (1) There is a definite and consistent relationship between intelligence test scores and advancement in clerical work. In both studies each increase in test scores brings with it an increase in the probability that after proper training an individual will be able to hold a more responsible job.

- (2) The relationship between test scores and advancement is of the same order in both studies.

- (3) The relationship holds for both men and women.

- (4) The relationship holds independently of schooling. No combination of test score and schooling was found to be more successful in predicting results for the group as a whole than test score alone.

(5) Reliability of the results is evidenced statistically in each study, and confirmed by the similarity of findings in the two studies.

(6) To secure comparable results

within broad occupational limits, it is not necessary that test structures, conditions of work, nor criteria of advancement should be precisely identical.

Aetna Life Affiliated Companies

BY MARION A. BILLS

Since April 1925, the Aetna Life Affiliated Companies have given a mental alertness test¹ to all applicants whom it considered hiring. It has also given this test, occasionally at first but later more frequently, to persons being transferred from one department to another. It was understood at the beginning that no use was to be made of the test results until sufficient material had been collected upon which to base a judgment of their usefulness. However, about two years later on account of the unsatisfactory experience we were having with employees who had received a score below 50, and under the broad-minded but insistent pressure of our department heads, we chose 50 as a tentative score for hiring, and about a year later for the same reason raised this minimum score to 60. Other than this, until after the data for the following study were completed, practically no use was made of test scores in selecting persons for advancement or training.

This year we have finished the job descriptions and classification of jobs throughout the entire Home Office

(2400 employees). The job classifications have been made on an entirely impersonal basis, only the actual work being performed entering into consideration and not the individual doing the work. All classifications have been done jointly with the Personnel Department and the officer in charge of the particular division involved. The clerical classification has fourteen levels running with sub-divisions from A, low, to H, high. The term "clerical" is used here in a much broader sense than is usually implied by it. It includes the entire office personnel from the routine file clerk, B group, through the underwriters and claim examiners, E group, to the H group who are supervisors of our large departments and the key men of the organization. The typing and stenographic classification has eight levels, running with sub-divisions from S1, low, to S4, high. In the following, each of these has for statistical handling been reduced to four levels. These four levels represent natural and easily recognizable breaks in responsibility of work.

The study here presented of relation of test score to job held includes 903 persons, 780 in the clerical group, and 123 in the typing and stenographic group. This includes all persons hold-

¹ Bureau Test VI from the Bureau of Personnel Research, Carnegie Institute of Technology—at present handled by the Psychological Corporation.

ing clerical or stenographic positions for whom we have test scores and who were still with the Company at the time classification of jobs was made.

Tables 1 and 2 show for the clerical and stenographic groups separately the percentage of each score range in

doing such work. The regularity of these tables is most noticeable and convincing; an increase in test score at practically every point, bringing with it an increase in the probability of a higher grade job. This is especially striking since there are so many factors in a large office organiza-

TABLE 1

Showing the relation between class of job and test scores in terms of percentage of each test score group in class of job

(Clerical—men and women)

CLASS OF JOB							
G and H.....				$\frac{1}{2}$	3	10	9
E and F.....	9	7	5	12	20	26	35
C and D.....	9	16	24	27	34	32	30
A and B.....	82	77	71	61	43	32	26
Test score.....	0-40	41-60	61-80	81-100	101-120	121-140	141 +
Total number.....	47	112	176	189	168	65	23 — 780

TABLE 2

Percentage of each test score group in class of job

(Stenographic—men and women)

CLASS OF JOB					
S4.....		13	13	25	50
S3.....	23	22	32	25	38
S2.....	31	22	30	29	
S1.....	46	43	25	21	12
Test score.....	0-60	61-80	81-100	101-120	121 +
Total number.....	13	37	40	24	9 — 123

the different levels of jobs. These two tables show clearly that there is a very definite tendency for people receiving the higher test scores to have been promoted to the higher grade jobs. For example, in the clerical group, while 82 per cent of the people who have scored below 40 are doing the simplest grade jobs, only 26 per cent of those scoring over 140 are

doing such work. The regularity of these tables is most noticeable and convincing; an increase in test score at practically every point, bringing with it an increase in the probability of a higher grade job. This is especially striking since there are so many factors in a large office organiza-

cannot be eliminated or statistically measured.

If we realize that S1 and S2 jobs correspond approximately to A and B jobs, S3 to a C job, and S4 to an E job, these two tables indicate two natural critical scores, one at 80 for promotion to the S3, C, and D grade jobs, and one at 100 for promotion to the S4 and E grade jobs and better. Table 3 gives the results of joining the two groups² and putting the preceding tables in a contracted form.

Table 4 shows the relation between test scores and rate of promotion

TABLE 3

Percentage of each score group in class of jobs

CLASS OF JOB			
E and better.....	6	12	29
C and D.....	20	29	33
A and B.....	74	59	38
Test score ..	0-80	81-100	100 +
Total number..	384	230	289 — 903

when 80 is taken as a critical score for promotion into the C grade job or better, and 100 as a critical score for promotion into an E grade job or better. A person scoring under 80 has one chance in four of being promoted to a C grade job; while his chance is one in two if he scores over 80. His chance of promotion to an E grade job or better is one in twelve, if he scores 100 or under; but this increases to one in five if he scores over 100.

² Through the rest of the paper the stenographic jobs are included in the clerical but for convenience are not designated each time.

Length of service is, perhaps, the most important measurable factor influencing class of job held. This is especially true since the Company's policy is to hire for the simpler jobs and promote as ability and openings permit. To determine the relation of test score to job held, with this factor eliminated, we have taken for separate study those hired in a given year. For this, 1925 was chosen, since with this year the longest time possible has been allowed for maturation of data.

TABLE 4

Per cent promoted of persons scoring above and below critical scores

TEST SCORE AT TIME OF EMPLOYMENT	PER CENT PROMOTED TO C GRADE JOB OR BETTER	PER CENT PROMOTED TO E GRADE JOB OR BETTER	ϵ
80 and under.....	26		
81 and over.....	52		
Difference.....	26		.031
100 and under.....		8	
101 and over.....		29	
Difference.....		21	.029

Under present conditions the choice of as early a date as possible was especially desirable, since there has been very little chance, regardless of ability, of promotion since 1930. Table 5 gives, for those hired in 1925, the same data that were given for the group as a whole.

Using only those persons hired in 1925, table 6 shows the relation between test scores and rate of promotion when 80 is taken as a critical score for promotion to a C grade job or better, and 100 as a critical score for promotion

to an E grade job or better. The interesting item here is that by eliminating length of service we increase the predictability of the test score on promotional chances. Putting it in a

TABLE 5

Percentage of each score group in class of job

(All hired in 1925)

CLASS OF JOB			
E and over.....	12	12	55
C and D.....	24	48	30
A and B.....	64	40	15
Test score.....	0-80	81-100	101 +
Total number..	70	25	35 — 130

convenient form, after seven years of service, a person scoring under the critical score, chances of promotion to a C grade job as against the group as a whole went up only 9 per cent, or from 1 in 4 to 1 in 3, while if he scored above the critical score it went up 24 per cent, or from 1 in 2 to 1 in 1.3. For promotion to an E grade job the low score

importance. There has been, and still is, a tendency to promote men rather than women to E grade jobs and better, and there was until the fall of

TABLE 6

Per cent promoted of persons scoring above and below critical scores

(Only persons hired in 1925)

TEST SCORE AT TIME OF EMPLOYMENT	PER CENT PROMOTED TO C GRADE JOB OR BETTER	PER CENT PROMOTED TO E GRADE JOB OR BETTER	€
80 and under.....	36		
81 and over.....	75		
Difference.....	39		.075
100 and under.....		12	
101 and over.....		56	
Difference ..		44	.091

1929, a tendency for men who did not receive rather rapid promotion to leave. Both of these tendencies are brought out in the tables 7 and 8, in which we have separated men and

TABLE 7

Percentage of each score group in class of job

CLASS OF JOB	MEN			WOMEN		
E and over.....	18	22	39	2	6	17
C and D.....	21	26	29	19	30	37
A and B ..	61	52	32	79	64	46
Test score	0-80	81-100	101 +	0-80	81-100	101 +
Number.....	103	84	159 — 346	281	146	130 — 557

group's chance of promotion with seven years' service increased only 3 per cent, from 1 in 12 to 1 in 8, while for the high score group it increased 28 per cent, or from 1 in 5 to 1 in 2.

Sex is another measurable factor of

women. Within each group however, the relation of test score to class of job held, and the increased predictability of the test with the elimination of the factor of service is clearly evident.

The increase of predictability of the

test score with the maturation of the data is especially noticeable for women

increase in chance of promotion from 1 in 33.3 to 1 in 25.0, while for the high

TABLE 8
Percentage of each score group in class of job
(Hired in 1925)

CLASS OF JOB	MEN			WOMEN		
E and over	30	25	75	4	5	39
C and D	35	50	25	22	52	33
A and B	35	25	0	74	43	28
Test score	0-80	81-100	101 +	0-80	81-100	101 +
Number	17	8	16 — 41	50	21	18 — 89

TABLE 9
Per cent promoted of men and women scoring above and below critical scores

TEST SCORE AT TIME OF EMPLOYMENT	PER CENT PROMOTED TO C GRADE JOBS OR BETTER				PER CENT PROMOTED TO E GRADE JOBS OR BETTER			
	Men		Women		Men		Women	
	All	Hired 1925	All	Hired 1925	All	Hired 1925	All	Hired 1925
80 and under	39	65	21	26				
81 and over	61	91	44	64				
Difference	21	26	23	38				
100 and under					20	28	3	4
101 and over					39	75	17	39
Difference					19	47	13	35

TABLE 10
Percentage of each score group in class of job
High school graduates with less than one year further training

CLASS OF JOB	ALL H. S. GRADS.			ONLY THOSE HIRED IN 1925		
E and over	9	8	21	12	14	41
C and D	30	38	30	32	60	41
A and B	61	54	49	56	26	18
Test score	0-80	81-100	101 +	0-80	81-100	101 +
Number	110	127	160 — 397	43	35	29 — 107

in E grade jobs. For the low score group it increases only 1 per cent, or an

score group it increases 25 per cent, or from 1 in 7.1 to 1 in 2.8.

Education is another measurable and important factor. Years of schooling and test score for the group of 903 under consideration correlates .53, $r = .014$, which corresponds to most previous correlations. Study of the interrelation of schooling, test score and classification of job held is complicated somewhat by this rather close relationship and also by the general policy of the Company not to keep in their employ college graduates who, after a relatively short training period,

TABLE 11

High school graduates with less than one year further training

TEST SCORE AT TIME OF EMPLOYMENT	PER CENT PROMOTED TO C GRADE JOBS OR BETTER		PER CENT PROMOTED TO E GRADE JOBS OR BETTER	
	All	Hired 1925	All	Hired 1925
80 and under . .	39	44		
81 and over . . .	49	78		
	—	—		
Difference	10	34		
100 and under . .			8	13
101 and over . . .			21	41
			—	—
Difference			13	28

do not qualify for an E grade job. It may be of interest to note in this connection that while only 17 per cent of the college graduates hired scoring under 110 have remained with us, 38 per cent of those scoring above that have stayed.

To study the effect of test score, independent of education, in determining the job held we have selected for separate study our largest single educational

group. This was made up of 397 high school graduates who had had less than one year of further training. Tables 10 and 11 give the same information as has been given previously, but for high school graduates only. It is apparent that, given an even start as regards education, there is only a slight difference in the promotional chances of those scoring under and over the critical score for the group as a whole, but that after the data have had time for maturation, we find that promotion could have been predicted by test score within this limited educational group with about the same degree of certainty as for the entire group of 903 individuals. That is after seven years of service, we find that educational training in itself has not materially influenced promotional chances but that test score has.

CONCLUSION

This study indicates that for at least this clerical group there is a decided and consistent relationship between test score at time of employment and grade of job which it is possible for the employee to attain and hold successfully. This relationship persists or becomes more noticeable as the extraneous factors of sex, education, and length of service are eliminated. It makes available an additional criterion on which to select employees for training and promotion to higher grade office jobs. We feel that this criterion has been used very successfully in the Aetna Life Affiliated Companies.

Scovill Manufacturing Company

BY MILLICENT POND

In an expanded sense of the designation "clerical work," comprising the whole series of record keeping, letter writing, planning, scheduling, estimating, pricing, purchasing, accounting, selling, and supervisory occupations of an organization, all of the men and women hired for clerical work for the Scovill Manufacturing Company from December 1, 1923 to January 1, 1930, were included in a study of test scores versus success or failure at work. The group included also all men and women transferred from non-clerical to clerical positions from July 1, 1927, to January 1, 1930. Persons not considered clerks for this purpose, and therefore not included, were errand boys and girls, weighers, and the so-called store-room "clerks" in various departments whose work is entirely physical. Draftsmen, chemists, and metallurgists as such, were omitted on account of the specialized technical training required prior to engagement with the company, though it is an open question whether this decision to exclude was logical or not. Persons hired for one school vacation only were omitted because it was felt that both the type of work assigned to them and the ratings given would be influenced strongly by the fact that they were to leave at the end of a given limited period of service. Otherwise the list is complete, numbering 286 men and 244 women. A mental alertness test³ had been given to each of

these persons at the time of hiring or of transfer. Records of promotions, demotions, terminations, rehiring, etc., were kept for all, and late in 1931, nearly two years after the last individual had entered the sample, the study was made.

By far the major emphasis in the investigation was given to the problem of securing an acceptable criterion of proficiency in clerical work, against which to compare the test scores. It was conceded that no measure of success would be strictly free from subjective opinion and chance, but an effort was made by department heads and research workers alike to select the more nearly objective data. Every record was analyzed in conference for two types of information, that which would lead to a classification of jobs independently of the variations in people, and that which would determine rather broadly the degree of success shown by different individuals in those jobs. Supervisors and research workers collaborated, and constantly submitted their subjective judgments to the check of such semi-objective data as established promotions (always conservative in this organization); demotions or discharges due to inability; and rankings rather than ratings, in occupations which yielded enough persons to make a ranking feasible. A rather elaborate preliminary classification was reduced to a simple one by the fact that only a few of the lines of demarcation between classes originally planned could be

³ Scovill Classification Test, an adaptation of the U. S. Army Intelligence Test.

drawn sharply. The final result was a gradation of positions in four broad categories for the men, and three for the women, and further, an independ-

of success. Each person was counted in the highest position in which he had performed satisfactory work, even if for other reasons he was no longer

TABLE 1
Classification of employees
Male

CLASS	GRADE OF WORK	EMPLOYEE RATING	NUMBER OF CASES
1	Sales Supervisors and Assistants, Office Department Heads, District Office Managers	Excellent or satisfactory	21
2	Salesmen, Order Clerks, Buyers, Assistant Department Heads, Office Overseers, Auditors, Rate Setters	Excellent or satisfactory	37
3	Estimators, Cost, Planning, Production, Sales, and Employment Clerks, Head Timekeepers	Excellent or satisfactory	43
4	Timekeepers, Factory Clerks, Checkers	Excellent or satisfactory	86
5	Salesmen, Order Clerks, Buyers, Assistant Department Heads, Office Overseers, Auditors, Rate Setters	Not satisfactory	
	Estimators, Cost, Planning, Production, Sales, and Employment Clerks, Head Timekeepers	Not satisfactory	44
6	Timekeepers, Factory Clerks	Not satisfactory	22
7	Checkers	Not satisfactory	33
Total.....			286

Female

CLASS	GRADE OF WORK	EMPLOYEE RATING	NUMBER OF CASES		
			Stenographers and typists	Clerks	Total
1	A High	All*	16	10	26
2	B Middle	Excellent	25	14	39
3	B Middle	Satisfactory	43	51	94
4	B Middle	Not satisfactory	14	14	28
5	C Low	All	33	24	57
Total.....			131	113	244

* None of the women in this group had failed to make good.

ent rating of the workers as excellent, satisfactory, or unsatisfactory. These two series combined in an arbitrary manner form the classification shown in table 1, which served as the criterion

doing that work when the study was made, or had left the company.

In table 2 the complete scatter diagrams of scores versus criterion are given for men and for women, with

correlation coefficients, and the means and standard deviations of the scores. The correlation for men is $r = .58 \pm .03$, for women, $r = .39 \pm .04$. These figures are low, but statistically reliable and capable of profitable

factory in any type of clerical work, more than half having failed in the most routine tasks. On the other hand, thirty-seven of the thirty-eight who scored above 180 were satisfactory in some clerical position, more than

TABLE 2
Relation between test scores and job rating
Male

CLASS	SCORE										TOTAL
	110	120	130	140	150	160	170	180	190	200	
1				1		1	6	8	4	1	21
2				2	4	11	12	7	1		37
3				2	4	17	11	7	2		43
4				8	16	34	21	6	1		86
5			2	3	15	19	5				44
6		1	2	3	7	5	3	1			22
7	3	1	6	8	9	5	1				33
Total.....	3	2	10	27	55	92	59	29	8	1	286

$R = .58 \pm .03$. Mean score = 164.4. Standard deviation = 14.8. Classes 1, 2, 3, 4 are satisfactory; classes 5, 6, 7, unsatisfactory.

Female

CLASS	SCORE										TOTAL
	110	120	130	140	150	160	170	180	190	200	
1					1	8	15		2		26
2		1	1	2	8	6	14	5	1	1	39
3			1	11	21	39	19	3			94
4		1	1	4	8	9	3	1			27
5			2	9	26	17	3	1			58
Total.....		2	5	26	64	79	54	10	3	1	244

$R = .39 \pm .04$. Mean score = 162.9. Standard deviation = 12.3. Classes 1, 2, 3 are satisfactory; classes 4, 5, unsatisfactory.

application to the problem of selecting men and women for routine or higher grade clerical work. It is worth while to analyse their significance for the various grades of work represented.

In the table for men we note at once that only thirteen of the forty-two clerks who scored below 150 were satis-

half having succeeded in the two highest classifications. Similar observations, though not quite so marked, can be made in the table for women. So much for the extremes of the score range. In order to evaluate the material for the whole range it will be convenient to condense table 2, both as to

score groups and classification of workers, and to use percentages instead of raw figures. This has been done in table 3.

It is now quite evident that with both men and women the opportunity for success in clerical work increases with increased score, and that it is a simple matter to find a critical score

yields a quotient of 6.0, showing excellent reliability. Again in the male group, 68 per cent of those who scored between 160 and 169, and 90 per cent of those who scored above 170 succeeded in some form of clerical work, classes 1 to 4 inclusive. This is a total of 79 per cent of those scoring above 160 as against 65 per cent of the

TABLE 3

Per cent score distribution, showing relationship between test scores and job rating

Male

CLASS	SCORE			TOTAL	CRITICAL SCORE	D/ε
	110-159	160	170-209			
1 + 2	7	13	40	20	170	6.0
3 + 4	31	55	50	45	160	8.1
5 + 6 + 7	62	32	10	35		
Total.....	100	100	100	100		
Number.....	97	92	97	286		

Classes 1, 2, 3, 4 are satisfactory; classes 5, 6, 7, unsatisfactory.

Female

CLASS	SCORE			TOTAL	CRITICAL SCORE	D/ε
	110-159	160	170-209			
1 + 2	13	18	56	27	170	7.6
3	34	49	32	39	160	4.7
4 + 5	53	33	12	35		
Total.....	100	100	100	101		
Number.....	97	79	68	244		

Classes 1, 2, 3 are satisfactory; classes 4, 5, unsatisfactory.

or passing mark for each class of work, which is experimentally the lowest score giving an improved chance of success over that of the whole group. In the male group, 40 per cent of those who scored above 170 have succeeded in the higher types of clerical work, as against 20 per cent in the group as a whole. This difference of 20 per cent divided by its standard deviation

group as a whole, and the quotient of this difference, 14 per cent, divided by its standard deviation is 8.1. Similarly for the women. On the other hand, the percentages of men and women scoring below 160 who were unsuccessful in any kind of clerical work are so high (men 62 per cent, women 53 per cent) as to suggest very strongly that this is the realm of

wasted time, effort, and money on the part of supervisors and company, and of wasted time, effort, and hope on the part of the employees.

The group of 244 women was composed of 131 stenographers and typists, and 113 clerks. If we separate these occupations, the differences in the two groups are not very great. The range of scores for the stenographers and typists is from 130 to 200, average, 165.0, standard deviation 11.7; the range for clerks is from 120 to 190, average 160.3, standard deviation 12.6. For stenographers and typists the critical score is 170 for all satisfactory classes, that is for classes 1, 2, and 3, while for clerks it is 170 for classes 1 and 2, 160 for class 3, as in the total group. The education of the two groups shows a greater difference, for 79 per cent of the stenographers and typists but only 37 per cent of the clerks had completed twelve years of schooling or more. These differences are of importance in the actual application of test procedure to employment, but they require no further discussion here.

Occupational subdivisions in the male group in this study tend to be too small for statistical treatment. The largest is a group of 44 order clerks, and this one confirms very nicely in detail the relationship between test score and preferment found in the whole sample. The correlation of rankings with score is $r = .410 \pm .08$, the rankings having been secured from various supervisors and blended into one scale by an executive who knew none of the test scores, but who knew order follow-up work thoroughly, as well as the special problems of each

supervisor. In the course of time, twelve of these clerks were promoted to positions higher than that of order clerk, i.e., class 1 positions; four who had been ranked below the upper third of the group rose to class 2 positions, which are considered on a par with the upper third of the order clerks; seventeen were unchanged in status; four were demoted to machine operating or other factory work, not frankly as incompetent, but rather early in the depression so that the factor of limited ability was almost certainly present; and six were demoted or discharged as incompetent. Taking into account these promotions and demotions and the ranking of the men whose positions had not changed, the correlation of test score with success becomes $r = .687 \pm .053$. There is a strong critical score at 170 for class 1 and 2 members of the group, since 86 per cent of those who scored above 170 are in these two classes, as against 50 per cent of the group as a whole, and 14 per cent of those who scored below 160. In spite of the small number in the order clerk group the reliability of the critical score is good, the quotient of the difference, 36 per cent, divided by its standard deviation, being 4.8.

SCHOOLING AND JOB SUCCESS

The question now arises whether schooling may not be as valid as test scores for the prediction of success in clerical work. For many positions explicit requirements are made in training or previous experience, such as that a stenographer shall be skilled in shorthand and typing, or that a buyer shall know markets and prices.

These specific requirements must be filled in the selection of a candidate, of course, but beyond that the question is whether or not the number of years of general schooling is as good a measure of success in clerical work as are the scores in a mental alertness test.

For the present group of men the correlation of years of schooling with the criterion of success is $r = .453 \pm .03$, for women, $r = .155 \pm .04$. These are both distinctly lower than the corresponding correlations of test score with the criterion. Since the correlation of scores with schooling is $r = .496 \pm .02$, one would not expect much advantage from combining the two measures; nevertheless a combination was attempted. The combination of scores and schooling, plotted against the criterion, gives $r = .601 \pm .02$ for the men, $r = .360 \pm .04$ for the women. These figures are slightly higher for the men and slightly lower for the women than test scores alone correlated with success, but the differences are less than the probable error of the coefficients, and might readily not occur in the same direction again. Since records of schooling are accepted from applicants as given, and are therefore subject to errors of report, there seems little reason to use them in this way. Clearly, then, schooling in general is less valid than test scores for predicting success in clerical work, and schooling combined with scores is less reliable and no more valid than test scores alone.

MEN AND WOMEN COMPARED

A brief comparison of the men and women in this study, with respect to

scores, education, and positions held, is of definite interest. In score distribution the two groups are closely similar, as may be seen from table 2. Both distributions are nearly normal, and the ranges, means, and standard deviations are almost identical. In schooling the two groups have the same mean, 11.8 years, and nearly the same range, but a noticeable difference in spread. Thirty-one of the men were college graduates against only three of the women, while on the other hand fifty-two of the men as against twenty-three of the women had had no more than eighth grade schooling. In critical scores there is an apparent similarity, since both groups show a critical score at 160 for lower grade work, and at 170 for higher types of positions. As we shall see presently, however, there is a difference here which has not been noted thus far.

The positions held by men and women in clerical work in this organization are not exactly comparable. In the lower gradations, to be sure, they are much alike, a woman time-keeper, factory clerk, or checker having the same duties and responsibilities as a man. As the positions advance, if the additional responsibility is that of complicated and important record keeping, girls will be found as well as men, but if the advance is in the amount of independent decision making, involving a requirement in initiative or aggressiveness, very few women are involved. The women who are associated with the men in these positions are the stenographers and class 1 or 2 clerks, serving quite frequently as office assistants. They are required to know most of the detail that the

men know, keep track of items over a wide field of activity, in addition attain mastery over the various letter writing techniques, mechanical, grammatical, and verbal, but they are not required to have the initiative in decision, they carry neither the authority nor the responsibility that the men do. For this reason at least, no job analysis would place the work of class 1 women higher than that of class 2 men, and in all probability, if the question of comparing the positions of men and women had been considered prior to any study of test scores, a conference of supervisors and research workers would have placed the work of classes 1 and 2 women with that of class 3 men. How does it happen, then, that classes 1 and 2, female, have a critical score at 170, comparable with that of classes 1 and 2, male, and higher than that of class 3, male, which is 160? How does it happen, in fact, that the critical score for all three satisfactory classes of stenographers and typists is as high as 170?

With the limited information at hand, we shall not attempt to decide upon any explanation for this difference in the requirements placed upon men and women. Certainly nothing that has been said has any bearing on the abilities of men and women in general, since we are working with a selected sample. In some way the difference is a function of the occupational situation within the organization, and possibly, also, of the local environment. It may be that there have been available locally, for routine or middle grade clerical work, more high scored women than men, and that in

consequence the competition has been keener for women, and the standards higher. Turnover figures do not seem to support this surmise. It may be that the presence in the male group of more college graduates than in the female, as noted above, has some bearing on the question. The argument would be that the women, in order to attain the higher positions in their series, having less general education than the men, have been required to possess better native endowment. This argument fails when we learn that the group of class 3 men, with whom we are comparing the class 1 and class 2 women, had in it only three college graduates. Finally, it may be that the men in the higher rated positions, i.e., in classes 1 and 2, with whom the higher rated women are associated, frequently in very direct personal service, tend to require in their assistants the ability in vocabulary, verbal reasoning, and speed, apart from ability for leadership, which in general they themselves possess. The hypothesis is quite impossible of proof in this material, but, it fits not only the problem here given, but also many an individual case of selection, criticism, commendation, or necessary adjustment, found in the course of employment office work.

CONCLUSION

In the foregoing study of intelligence test scores and success in clerical work, we have drawn the following conclusions. Opportunity for success increases with increase in score, both for men and for women, and not only in the total group, but in occupational sub-groups as well. Critical scores,

which may be used as passing marks in practical application, are easily deduced from the data gathered, and are statistically reliable. Schooling, in general, is less valid than test scores in the prediction of success, and less reliable, but this fact does not deny the suitability of setting specific educational requirements for certain occupational subgroups. Schooling and scores combined are no more

valid in prediction than scores alone. A comparison of critical scores for men and women shows identical requirements in the lower grades of clerical work, but apparently higher requirements for the women than for the men in the middle grades. Since women are absent from the highest grades of work, no comparison of requirements can be made at this level.

(Manuscript received January 27, 1933)

News Notes

NATIONAL INSTITUTE IN 1932

According to the latest Annual Report of the National Institute of Industrial Psychology (Great Britain), 1932 was an outstanding year. In no other year during the Institute's history have so many industrial and commercial concerns availed themselves of its services, so many applicants received vocational guidance, so many books have been published and researches conducted by the Institute, and so many public lectures given by its staff. In no recent year has there been so large an increase in its membership. Income during the year was approximately \$100,000.

Investigations for private companies were conducted in gold mines and on tea and rubber plantations in India; in chemical, dyeing, metal, photographic and gas works; into the manufacture of chocolates, confectionery and other food products; and in warehouses, stores, a restaurant, a dairy, and a bus line. All were concerned with improving adjustment between workers and their work.

Seven books were published: *Ten Years of Industrial Psychology*, by H. J. Welch and C. S. Myers; *Industrial Psychology in Practice*, by H. J. Welch and G. H. Miles; *Business Rationalization*, by C. S. Myers; *The Problem of Incentives in Industry*, by G. H. Miles; *Talents and Temperaments*, by A. Macrae; *The Causes of Accidents*, by E. Farmer; and *Muscular Work, Fatigue and Recovery*, by G. P. Crowden.

Special researches conducted by the Institute include a study of the nature and measurement of the mental abilities involved in factory assembly operations, development of a battery of automobile drivers' tests, and tests of perseverance and color discrimination, and experiments designed to test the effectiveness of vocational guidance.

Clearly, the Institute is filling a real need

in Great Britain for the services of trained industrial psychologists.

PENN STATE SUMMER MANAGEMENT COURSE

The Eighteenth Annual Summer Management Course at Pennsylvania State College will be held this year from June 7 to June 15 inclusive. The course is held under the joint auspices of the Department of Industrial Engineering and the Engineering Extension Department.

In addition to a special discussion of current economic problems, the following are some of the topics to be studied: industrial organization; principles, methods and application of production control; trends in personnel management; principles of operation study; economic control of quantity and quality; standard costs; methods of industrial training; factory layout; and the development of executive ability.

The faculty for the course will consist of Clarence E. Bullinger, J. Orvis Keller, and Samuel B. Colgate.

For further information, address Department of Engineering Extension, Pennsylvania State College, State College, Pa.

CARNEGIE GRANT AIDS STUDY OF OCCUPATIONAL TRENDS

A grant of \$3100 from the Carnegie Corporation to the Personnel Research Federation to aid in a study of methods of research in the field of occupational trends is being used to complete a survey of what has been done and to prepare an annotated bibliography of the subject and a digest and appraisal of methods heretofore employed.

THE OCCUPATIONAL PROGRESS OF WOMEN

The Occupational Progress of Women, 1910 to 1930, recent report prepared by the Women's Bureau of the United States Department of Labor, is of special significance at

the present time. Based on census data from 1910 to 1930, the report describes changes in the occupational distribution of women.

An important deduction to be made from a study of 1930 occupation statistics is that an unexpectedly large increase has taken place among women usually at work, whether one considers merely the last decade or the 20-year period from 1910 to 1930.

In 1930 only a very small proportion of all women who work were engaged in pursuits not ordinarily followed by women. In fact, the proportion of women in jobs considered unusual for them to pursue was apparently even smaller in 1930 than it was in 1920, when they had recently had incentive to undertake a man's work in order to release him for war duty.

Decided changes have occurred, however, in the distribution of women among the various occupations. Servants ranked first as a woman-employing occupation both in 1920 and 1930; in 1910, however, first place was held by farm laborers, the occupation that ranked sixth in 1930. School teachers advanced from fourth place in 1910 to second place in 1930, while stenographers and typists, the third occupation in 1930 from a numerical standpoint, ranked eighth in 1910.

Between 1920 and 1930 the greatest increases occurred among women in professional service, in domestic and personal service, in trade, and in the clerical occupations.

This Bulletin may be obtained from the Superintendent of Documents, Washington, D. C. Price, ten cents.

INSTITUTE OF OCCUPATIONS

The National Federation of Business and Professional Women's Clubs is featuring at its Biennial Conference in Chicago a two-day institute of occupations, July 10 and 11. Thirty major vocations will be represented at round tables at which opportunities for women will be discussed. It is hoped at these round tables to give women a clear picture of their vocational status, of their opportunities and handicaps, and to point out vocations to which they are equipped to transfer.

Further details may be obtained from

headquarters of the National Federation, 1819 Broadway, New York.

SCHOLASTIC APTITUDE

The April number of the *Educational Record* contains a report of the 1932 Psychological Examination of the American Council on Education. The report gives norms based on the records of 43,384 students sent in by 205 colleges. The median score was found to be 163.72. The twenty institutions having the highest median scores follow:

<i>Institution</i>	<i>Median Score</i>
Haverford College.....	249.55
Antioch College.....	234.33
Wells College.....	223.57
Chicago, University of.....	218.78
Oberlin College.....	217.05
Bowdoin College.....	214.12
Rochester, University of....	210.42
Dartmouth College.....	210.22
Trinity College.....	210.00
Immaculata College.....	207.50
Moravian Seminary and College for Women.....	205.00
Goucher College.....	204.77
Kenyon College.....	203.33
Elmira College.....	203.12
Simmons College.....	203.00
Georgian Court College....	201.67
Northwestern University....	201.64
Alberta, University of.....	201.11
Case School of Applied Science.....	200.00
Rosemont College.....	200.00

INSTITUTE FOR SOCIAL PROGRESS

A unique venture in group thinking which may mark the beginning of a new movement in adult education is sponsored by outstanding educators and economists, and will be tried out this summer in Wellesley, Mass., when the Wellesley Summer Institute for Social Progress holds its first session, July 1st to 15th, on the campus of Wellesley College. Men and women from all parts of the country who are interested in constructive steps toward improving present social and economic conditions are invited to take part.

The plan is to assemble a group of representative people from different vocations, in

brief, a cross-section of a typical community, to think out together practical solutions for some of our most pressing social and economic problems. There are no scholastic requirement or age limits for the Institute. The best qualification an applicant can present is the ability to contribute constructively to discussion, and an open mind to consider other points of view. From the list of applicants 130 men and women including a balanced number of business and professional people, farmers, housewives, clerical and industrial workers, will be invited.

Among the prominent men and women serving on the Governing Board are Roger Baldwin, director of the American Civil Liberties Union; President Karl T. Compton of Massachusetts Institute of Technology; Edwin S. Smith, Massachusetts Commissioner of Labor and Industries; Henry S. Dennison, president of the Dennison Manufacturing Company; Vida D. Seudder, professor emeritus of Wellesley College; Devere Allen, editor of *The World Tomorrow*.

Lectures by experts in different fields, and round table discussions in which everyone will take part, make up the program. Living accommodations will be provided at cost. For information write Dr. Alfred D.

Sheffield, 31 Madison Street, Cambridge, Mass.

FORTHCOMING MEETINGS

JUNE 6 AND 7

Annual Conference of the National Office Management Association, Hotel Pennsylvania, New York.

JUNE 7-14

Eighteenth Annual Summer Management Course of the Pennsylvania State College, State College, Pa.

JULY 10 AND 11

Institute of Occupations, held in connection with the Biennial Convention of the National Federation of Business and Professional Women's Clubs, Chicago.

AUGUST 23-26

Sixteenth Annual Conference on Industrial Relations, National Council of Y. M. C. A., Silver Bay, New York.

SEPTEMBER 7-13

Annual Meeting of the American Psychological Association, Chicago.

SEPTEMBER

Eighth International Psychotechnical Conference, Vienna.

Personnel Books

EDITED BY O. MILTON HALL

PSYCHOLOGY APPLIED

By George W. Crane. Chicago: Northwestern Univ. Press, 1932, xii + 586 pp., \$4.00

Reviewed by HAROLD E. BURTT, *Ohio State University*

The present book is a valuable addition to other works which attempt to cover the greater part of the field of applied psychology in a single volume. It differs from others a little in emphasis, containing somewhat less of the technological applications of psychology and more of its applications to the problems of the individual.

The author takes it for granted that the reader has, either through an introductory course or through general reading, acquired some background in the field. Consequently, he plunges immediately into a good chapter on motivation with well-chosen and interesting examples. This is followed by a somewhat conventional discussion of learning and memory with, however, emphasis on economy of memory. The chapter on increasing efficiency, although comparatively brief, will be of some interest to personnel people. For example, fatigue is discussed in only three pages. The discussion of sex problems is quite frank. The treatment of suggestion is mostly with reference to advertising and selling.

The chapter on improving personality is one of the more original ones. Such improvement consists pretty much in salesmanship. Indirect selling points are recommended as better than blunt, direct ones and we have illustrative material in the form of selling points for one's personality contributed by various students. Being popular, according to the author, involves gaining prestige by presenting one's own personality in a favorable light and then using this prestige to add weight to other

party's personality. One should likewise avoid inflating one's self at the expense of others. Youth may be won by suggesting maturity and middle age may be flattered by suggesting youth. Developing conventional recreational habits and a fund of information on etiquette will help promote personality.

Psychology in selling is next discussed and considerable stress laid on enthusiasm of salesmen. The author seems to the reviewer to stress almost too much the importance of pep meetings. The usual attention, desire and action topics are presented and dangerous points in opening and closing a sale noted. The chapter concludes with 10 rather interesting axioms for salesmen. Then follows a chapter on advertising, dealing with methods of research, media, trade names, slogans, feelings, radio, color, pictures and display. There is not very much about actual copy.

The chapter on personnel administration will doubtless be the one of most interest to readers of the present journal. It contains little that cannot be found elsewhere with more extensive treatment. Physiognomy is discussed negatively, some stress is laid upon tests, especially intelligence tests and the interview. The only serious omission is the failure to give any hint as to the importance of validating tests or other measurements.

The discussion of music and morale runs into some original considerations, particularly along the line of the possibilities of music as a medium for propaganda, that is,

suggestion. Then there is a transition to other aspects of propaganda and certain rules for carrying it out or for resisting it. Another interesting chapter is on the public platform. It contains suggestions as to how to weld a crowd into an audience and also suggestions for the chairman in charge of a meeting or introducing a speaker. Stress is laid upon stage materials, manner, and the words used. Hints are given for handling a hostile audience and various formulae for getting the audience in a favorable attitude. This is, perhaps one of the most original chapters in the book.

The discussion of writing and art offers some suggestions for the writer, particularly along the line of creating suspense and getting attention. Specific forms of writing which are further discussed are advertisements and collection letters.

Child psychology stresses personality considerably. It has some novel speculation as to the divorce hazard as related to childhood factors, for example, position in the family. There are likewise some hints for developing self-reliance. Under educational psychology we have description of quite a few intelligence tests and their uses. Stress is laid on the critical nature of the early school contacts and the socializing effect of the nursery school is emphasized. We read that "teaching is salesmanship." The difficulties in systems of grading leads to a presentation of conventional statistical techniques and their formulae. It is finally suggested that education may contribute to political problems, particularly in leading persons to detect fallacies in political reasoning. The discussion of psychiatry and mental hygiene includes enumera-

tion of normal and abnormal ways out of mental conflicts and some discussion of psycho-analysis. The book concludes with some suggestions for the physician and a discussion of criminal problems, particularly with reference to the psychological makeup of the criminal.

As suggested above and as admitted in the introduction of the book, much of the ground is conventional and merely presented in a new form. However, some rather original items are introduced, such as the discussions on improving personality and on public speaking. The order of the book impresses the reviewer as a trifle random but this is no serious drawback as the separate topics are presented in adequate fashion. The author follows psychological categories rather than discussing the material on the basis of different technological fields, such as business, medicine, and law. A good deal of the applied psychology discussed is the type which the given individual might apply to himself rather than the type employed by some expert in achieving some technical end. Personnel people will find a few chapters on industrial and business aspects of the field but nothing which they could not find in other similar works. The greatest contribution of the book, as suggested above probably lies in its more original chapters. The book is well written, readable, and interesting. Illustrative material is well chosen. Adequate references appear at the end of each chapter. It might be interesting even to try the book as a text in an introductory course with a view to orienting the students in the practical field and selling them psychology.

THE RÔLE OF THE TEACHER IN PERSONNEL WORK

By Ruth Strang. New York: Bureau of Publications, Teachers College, 1932,
xv + 332 pp., \$2.00

Reviewed by ORDWAY TEAD, *Harper and Bros.*

This book is one more wholesome sign of the progress of the personnel point of view in education. It is addressed to teachers at all levels to help them "do better work with individuals which, of necessity, they must

do anyway, adequately or otherwise." In all student contacts "there are opportunities for teachers to know their students, enjoy them, and be a factor for good in their lives." The book thus aims to set forth

the teacher's special rôle, to present methods and techniques of contact and problem handling. The illustrative data are drawn from high school and college experience although the context is readily adaptable for application in elementary school work.

The text is divided into Parts which treat of the "Relation of the Teacher to Personnel Work;" "Adolescent Adjustments;" "Techniques;" "Counseling;" "Specific Problems." The treatment is up-to-date, informed and liberal. The scope is such that a careful reading should bring every teacher to a new awareness of the complexity of the problem, the importance of individual differences, the central value of personality growth, the subordinate significance of any specific courses of study, the pervasive and potential influence of the teacher's own total personality.

It is, perhaps, a sad commentary on the present state of educational practice that books like this have to be written at all. One is reminded of the wise sermons that have been preached from the text—"And as thy servant was busy here and there, he was gone." By implication at least, this study leads me to ponder the need for a new orientation in education. Indeed, following a reading of this, one might with great stimulation and profit follow on to a reading of Professor H. H. Horne's new *The Democratic Philosophy of Education* (Macmillan) which so admirably supplements it, or of Professor George A. Coe's *Educating for Citizenship* (Scribner).

Speaking critically, I wonder if the personnel point of view is here sufficiently defined. I would hazard the further definition

that for educational purposes personnel work is the effort to relate educational administration and the formal educational process to the total life of the student in such a way as to assure his adequate and satisfactory adjustment to his world. As in other walks of life, the size of institutions and the relative specialization of functions in education have seemingly made necessary a specific assignment of the personnel function and a consciously organized effort to unify the student's life and work. Indeed, this formulation of the problem discloses profound difficulties and calls into question the present size of educational institutions and the present rigid and compartmentalized scheme of courses and curricular layouts. It is hard to think of the need for student personnel work with Mark Hopkins at one end of the log and the student at the other! But that, of course, is another story.

I believe, also, the importance of the personality of the teacher or adviser might well have been stressed more, as well as the difficult situation at present in the religious and moral fields. But these matters could lead out to long digressions; and it is to be hoped that the teacher or teacher of teachers will explore these closely related aspects more fully.

Certainly this volume is a splendid introduction to a field urgently requiring mastery by all teachers. If it can, as it is intended to, provoke the reader to follow the implications of its suggestions in the use of techniques and in self-scrutiny as to his own orientation to life, it will admirably serve its timely purpose.

THE DISABLED MAN AND HIS VOCATIONAL ADJUSTMENT

By Roy N. Anderson. New York: Institute for the Crippled and Disabled, 1932, 102 pp., \$1.00

Reviewed by FREDERIC GARFIELD ELTON, *New York State Rehabilitation Bureau*

In the publication of this book the author has made a very timely contribution to the work of vocational rehabilitation. During the past thirteen years that are covered by

this survey, considerable attention has been given by public and private organizations to the care of the disabled. This has involved all manner of treatment both physi-

cal and mental, has included advice and guidance, and specific vocational re-education. Thus, it may be said that the science of restoration has been constantly perfected. Unfortunately, however, the task of securing jobs for these people has been scattered. As the author says, "the problem of the handicapped man is not so much his inability to perform work as it is to get the job." Employers, as a group, have been prone to consider the disabled person as a risk. They have feared the possibility of a second injury. This opinion was not founded upon knowledge but merely upon assumption. As a matter of fact, only eight men in this survey are reported as having been again injured. Over this period of thirteen years, undoubtedly, thousands upon thousands of disabled people have been placed in employment and have proved themselves capable and satisfactory workers. The efforts, however, directed towards treatment and preparation have far outnumbered those directed towards placement. The fact that large numbers of these disabled people, although properly prepared, were not securing an opportunity to work, has been emphasized by the tremendous increase in this number due to the present curtailment in all employment opportunities. Those engaged in this work are fully alive at last to the fact that all this time and money consumed is only breeding greater hopelessness and disappointment if this condition continues. The attention of those engaged in this work is now being directed toward an effort to break down these barriers presented by employers. There is perhaps no better way of proving that the disabled, as a group, make good and steady workers than to present the results of a study of the employment of a large number.

Mr. Anderson has done just this. He has presented here a study of 4,404 persons, with orthopedic disabilities, who have been returned to jobs. He tells us that the majority of those falling within the scope of this study were "men seeking employment without special training after disability." His very definite proof of their stability in employment, therefore, emphasizes the greater value to industry of those specially trained

and equipped with knowledge and skill to fit carefully selected jobs. While the author has handled this survey as a group, he has also given due consideration to the fact that it is a matter of individual adjustment. Although he presents the names of jobs and the types of disabilities found among those employed in these jobs, he does not presume to claim that all with the same disability would be found capable of following these same jobs. He makes due allowance for individual differences. It takes more than a disability to make the disabled man fitted or unfitted for a particular job. His study does show, however, that these men are employed in 635 occupations and hold 10,176 different jobs and that these occupations cover 70 per cent of all the occupations listed in the 1930 Census. With due consideration, therefore, of the suitability of different individuals for different jobs, we find that the disabled man is able to do, as the author says, "anything from A to Z." He gives three factors as governing this selection. The range of abilities, the personality, and the type and seriousness of the disability. It is not indiscriminate job getting, but individual discrimination and job selection.

Studying, as he was, the results of a placement agency, he was not content to accept the three or seven day definition of placement usually accepted, but required that each case which he included should have been on the job at least one month. As the author says, "It surely seems safe to conclude that if a man holds down a job for a month, he has passed the period of trial and has shown his ability to perform the duties required in that occupation." On this basis, this study shows that 52 per cent of the jobs were held for a period of six months or less, 18 per cent were held from six months to twelve months, and 29 per cent covered periods ranging from thirteen to ninety-nine months or more. By comparing this with a study made of 41,686 physically normal workmen in twenty-eight establishments during 1917-1918, the author points out that it shows 75 per cent of these workmen remaining on the job for six months or less and only 10 per cent remaining from six months to a year. In compar-

ing, then, these figures we find that 47 per cent of the physically handicapped workmen remained on the job for six months or more while only 25 per cent of the physically normal workmen remained on the job during a corresponding length of time. Likewise, we find the labor turnover in short time employment in the physically normal group much greater than in the physically handicapped group. This is indicated by the 75 per cent of the former who held their jobs for six months or less as against the approximate 52 per cent a similar period among the latter. These figures not only indicate, therefore, less labor turnover but, stated reversely, indicate greater stability on the part of the handicapped men.

The group that the author has studied is an average group of workmen. The average age is 31 years. Forty-six per cent were classified as unskilled when they applied for jobs. Twenty-three per cent were classified on their past occupation as semi-skilled. Twenty-five per cent were classified as skilled and six per cent as clerical. In view of the fact, as pointed out by the author, that very few of these people received training after disability, it is not surprising to learn that after placement the unskilled remained unskilled, that the semi-skilled largely went into unskilled jobs and the skilled did likewise. The whole point of vocational rehabilitation has been, through re-education to conserve the skill and to raise, if possible, the semi-skilled class. This change from semi-skilled and skilled occupations to unskilled occupations is, therefore, indicative of the lack of re-education in the cases studied. Such re-education is often impossible due to the lack of general education. In this particular, although the educational background was only interpretable in 2,295 cases, it may be considered that this was a cross-section of the group. Eighteen per cent had from one to six years of schooling. The majority, 54 per cent, had left school at the end of the seventh or eighth grade. Although 24 per cent had attended high school, only 6 per cent were recorded as graduates. Thus, we see that 72 per cent of these men had not gone beyond the eighth grade in school.

Therefore, these men were not only physically handicapped but also educationally handicapped.

In view of the large percentage of unskilled workmen at the time of application and the stepping down of others into this classification after placement, it is not surprising to find, as a result of this study, that the average weekly wage is slightly lower than the average weekly wage of the physically normal workmen.

Mr. Anderson's tabulation of disabilities and of jobs filled satisfactorily is convincing proof that a cross-section of the community composed of those with disabilities compares very favorably in work ability with a cross-section of the community composed of those who have no disability. In the selection of these 4,404 cases there was no discrimination as to disablement. Consequently, the disabilities range from the most serious, involving both arms and both legs, to a slight lameness of one leg. This, as can be seen, presents a very wide range for study.

With due consideration to the warnings with which Mr. Anderson has interspersed his book, it is a valuable text-book to all those engaged in handling disabled people. It must be remembered that Mr. Anderson is dealing with a group study of a problem which has been very rightfully diagnosed as one of individual case work. The study of the group as a whole proves the employability of disabled people as a whole. It has nothing, however, to do with the limitations and possibilities of the individual. The author has recognized this and has tried to convey this thought to his readers. To attempt to use his tabulation of jobs and disabilities other than as suggested and to fail to consider those other factors of ability and personality would be unfortunate. Undoubtedly, its greatest value should be in convincing employers that by the use of proper selection in the hiring of disabled people that they can secure competent and steady workers. By establishing the employability of such a large group as 4,404 disabled persons, it paves the way for considerate selection and adjustment in employment rather than thoughtless elimination.

THE DEMOCRATIC PHILOSOPHY OF EDUCATION

By Herman Harrell Horne. New York: Macmillan, 1932, xxiii + 547 pp., \$2.50

FACT: THE ROMANCE OF MIND

By Henry Osborn Taylor. New York: Macmillan, 1932, ix + 166 pp., \$1.50

EDUCATING FOR CITIZENSHIP

By George A. Coe. New York: Scribner's, 1932, xvi + 205 pp.

Reviewed by ORDWAY TEAD, *Harper and Bros.*

These three books are contributions to a basic revaluation of educational theory. The first and third volumes are profoundly significant of the educational revolution which is gradually getting under way in this country and which in our generation is destined to have a fundamental effect upon educational practice. No one who pretends to a serious interest in the improvement of education can ignore these statements of Professor Horne and Professor Coe.

Professor Horne's book is novel and effective in method. It parallels chapter by chapter Professor John Dewey's *Democracy and Education* and each chapter is comprised of an exposition of Dewey's thesis plus the author's comment. The book thus becomes in effect a critique of much current educational philosophy. It is in many respects highly sympathetic to Dewey's position and completely appreciative of his contribution; in addition, there is the value that the author has taken account of Dewey's subsequent writings as they may have modified his conclusions on educational theory. The basic nature of the difference between Dewey and Horne is best revealed by two quotations which illustrate the disparity in their points of view.

For example, Professor Horne says of Dewey,

"His real novelty and originality is in limiting the essentials of educational method to the essentials of scientific method. And this originality, as we have seen, has the defect of its quality. It is strong where education is scientific and weak where education is literary, historical,

aesthetic, and spiritual. Of course there should be scientific thinking in the educative process, but education and life are more, much more, than scientific thinking."

And, again, the following indicates the difference in point of view, although I am not at all sure that Dr. Dewey would not agree with this comment and claim that the commentator was drawing unwarranted conclusions from Dewey's statements.

"Turning from the social and economic to the educational aspects of the problem of labor and leisure, what shall we say of Dr. Dewey's proposed union of culture and utility? This, that it is a one-way union. Much culture may be attached to any utility but utility simply can not be attached to all culture. . . . Some branches of mathematics are liberalizing without being socially useful. Life is for enjoyment as well as for service. If one still insists that enjoyment is use, then the reply is that 'use' has ceased to have a useful meaning. A useful activity sends one beyond itself for its significance; an enjoyable activity is its own excuse for being. Dr. Dewey's proposal can succeed in making all utilitarian education more liberal; it can not succeed in making all liberal education utilitarian. This defect is inherent in the pragmatic philosophy itself which holds all ideas are only tools, allowing no knowledge to exist for its own sake, and maintaining that the human intelligence, responsible as it is for all theories of education and of life, is only 'an organ for the control of nature through action.'"

As these quotations suggest, Professor

Horne feels that a proper conception of education must be less intellectualistic and must, as he says, take more account of the "uses of quiet and silence."

Occasionally one feels that the author is taking a too literal view of Dewey's thought. But in the main I cannot help feeling that the total result is a helpful corrective in emphasis which leads to a supplementing of the popular conception of Dewey's ideas which is sound and should have beneficial results in practice.

Mr. Taylor's book is to be mentioned here because with a wholly different method he is reaching a similar conclusion that we need a broader conception of the nature of "facts." He is pointing out that—

"The conclusions and admissions of thoughtful scientists disclose such limitations and uncertainties in the facts of science that its strangulated results made no approach to satisfying the fact-making nature of man. He realizes so many facts of impulse, intuition, desire—love, beauty and the fullness of life—that the mathematical, operational and symbolical results of the scientific procedure present him with but a curious view of the world."

In a word, this author is pleading for a

philosophical conception of facts which "would seek to include and coordinate those of religion, art, practical life and science, and present a catholic appreciation and judgment upon man and his world."

My praise of Professor Coe's newest volume can hardly be overstated. He has plunged into the center of the most difficult and controversial problems of education today. He discusses, for example, the relation of the teacher to political action and participation, the ways of increasing a civic sense in school pupils, the distinction between education and propaganda, the supervision of all forms of non-public education, and the problem of racial relations in schools.

Each of these subjects is treated in an informed, modern and liberal way; and the author's exposition of how the forces of reaction in education can be coped with is sound and definite. Rarely have I seen a book which disposes so effectively of so many vicious current dogmas and prejudices. How to get wide public attention for and acceptance of the views here presented remains as a vital challenge. Everyone who has any relation to education—and everyone has—should read this book.

THE PHILADELPHIA UPHOLSTERY WEAVING INDUSTRY

CASE STUDY OF A DECLINING INDUSTRY IN AN OLD MANUFACTURING CENTER

By C. Canby Balderston and Others. Philadelphia: Univ. of Pennsylvania Press, 1932, 231 pp., \$2.50

Reviewed by H. L. AMONETTE, New York State Rehabilitation Bureau

It is difficult to imagine a more detailed and comprehensive study of an industry than this fine work by the Industrial Research Department of the Wharton School of Finance and Commerce. It suggests a method of settling other labor disputes and rehabilitating declining industries. The report on the industry grew out of a labor dispute between the Upholstery Weaving Manufacturers' Association and the various unions involved. At the invitation of both parties, the Industrial Research Depart-

ment made, and incorporated in this work, an exhaustive study of all factors involved in the production of upholstery weaving in Philadelphia.

The findings, supported by a mass of statistical data, carefully analyzed, form a model example of industrial research. Concrete recommendations for the rehabilitation of the industry are included in detailed form, involving suggested changes in labor policies, production policies, and designing and selling policies. These suggested

changes are calculated to eliminate the poor competitive position in which the Philadelphia industry finds itself because of higher labor costs, the "short-order" evil, and the growing competition from other areas.

The history and economic characteristics of the industry are first outlined as a background for the study. A careful survey is then made of the machinery of collective bargaining and its operation, and some changes are suggested in the direction of simplicity and flexibility as affording a channel for economy. Then follows an analysis of earnings and working opportunity, showing a rapid decrease in annual wages and increasing unemployment. Production problems are next studied, and it is

found that immediate savings on waste, labor, and overhead would not be sufficient to restore Philadelphia to a fair competitive position. The findings in relation to marketing problems, centering around style and designing and volume, are definite. Thirty per cent more business would be necessary to earn 6 per cent on the capital invested. A detailed study of the financial structure of the industry concludes the investigation.

The proposed remedies involving labor and personnel problems suggest a very sound basis upon which all arbitration should be undertaken; namely, a thorough understanding of all factors involved in projection as a necessary background for trade agreements and wage adjustments.

INTRODUCTION TO INDUSTRIAL MANAGEMENT. By E. C. Robbins and F. E. Folts. New York: McGraw-Hill, 1933, xi + 356 pp., \$3.00.

In preparing an elementary textbook in industrial management Professors Robbins and Folts have adopted the case method, using experiences and problems drawn from actual operations in industrial concerns. The book has both the advantages and defects of this method. In the hands of a skilled instructor familiar with factory and office management it should serve as a useful and stimulating guide to the student embarking upon a study of management.

After an introductory chapter in which the history of American industry and the growth of the scientific management movement are briefly sketched, the authors plunge at once into discussion of practical problems. The book has three main divisions: economics of production, factors of production, and control of the production process. Some of the specific topics treated are: specialization of labor, standardization, diversification, raw materials, buildings and equipment, personnel policies, planning and scheduling, and cost control. In treating each topic, the authors introduce a "case" and one or more problems. Theoretical discussion is reduced to a minimum, chief emphasis being placed upon specific situations.

E. S. C.

THE THEORY OF WAGES. By J. R. Hicks. New York: Macmillan, 1932, xiv + 247 pp., \$2.75.

An English economist here attempts "a restatement of the theory of wages in a form . . . reasonably abreast of modern economic knowledge." The thesis is that, in a free market, the determination of wages involves merely a special application of the general theory of value. Then dismissing lightly those peculiarities which make labor a special case—a method of reasoning familiar to economists—the author finds "marginal productivity" to be the fundamental determinant. Successive chapters explain how the "peculiarities," temporarily laid aside, qualify the fundamental determinant so that "there is no necessity" for the actual wage received by a worker "to equal his marginal product." The latter part of the work (chapters VII–XI), devoted to the regulation of wages, explains how combinations of workers and other efforts at social control of wages handicap the operations of the "free market," and so bring about further deviations from the "marginal productivity" level.

Practical men who are also students of economic theory will find much to ponder over in this book.

S. J. B.

THE YELLOW DOG CONTRACT. By Joel I. Seidman. Baltimore: Johns Hopkins Press, 1932, 96 pp., \$1.00.

The author defines the yellow dog contract and traces its evolution from the conspiracy prosecutions and the bitter struggle against signing the "document" in early 19th century England; he notes the slowly growing conviction expressed in statutes and court decisions of several American states, that the contract is opposed to public policy and void—a conviction now held in suspense until the courts have passed finally on the Federal anti-injunction law of 1932.

Succeeding chapters describe the conditions, methods and objectives of the contract's use; its varied provisions, from simple agreements—sometimes verbal—to elaborate formal documents; the effects of its use: embitterment of workers, restraint on union activity, the easy way it provides to injunction abuses. An appendix (pp. 87-92) reprints eight different yellow dog contracts, reputed to be representative types.

S. J. B.

INTRODUCTION TO TECHNOCRACY. By Howard Scott and Others. New York: John Day, 1933, 61 pp., \$.90.

To John Day Company goes the credit of publishing the only authorized presentation of much-talked-of Technocracy. It is a brief booklet, in two chapters or "Parts" (The Technologist Looks at the Depression, and Integrating the Physical Sciences in Attacking Social Problems) and some odds and ends such as a selected reading list, a note on the work of Thorstein Veblen, and a collection of definitions.

If you want to know what Technocracy is all about, this is probably the best source you can find.

UNIVERSITY TRAINING FOR NATIONAL SERVICE. Edited by Morris B. Lambie. Minneapolis: Univ. of Minnesota Press, 1932, 325 pp., \$3.50.

The prestige value of careers in the national or public service is notoriously low in the United States, in contrast with other countries, notably Great Britain. Consequently any serious move toward correct-

ing this condition is to be welcomed. Such a move was the Conference on University Training for the National Service held at the University of Minnesota. The present book reports the proceedings of that conference.

The objective was to provide opportunity for representatives of American colleges and of the United States Government to discuss their responsibilities in training and recruiting university graduates for the national service.

"While consideration was given to the entire range of administrative, professional, and scientific services, special attention was centered upon the fields of agriculture and forestry, law, the consular and diplomatic services, physics and chemistry, engineering, social welfare, and economics and statistics. The general aspects of the problem dealt with by the conference included the functions of the universities as training centers and the resulting problems of curriculum; the career opportunities in the federal service; student and faculty attitudes toward the service; types of examinations for entrance; methods of informing qualified students as to vacancies in the service; and procedures for university and government cooperation."

The volume is well edited and organized. The material provides a solid ground-work for further building and progress.

O. H.

EDUCATION ON THE AIR. Third Yearbook of the Institute for Education by Radio. Edited by Josephine H. MacLachy. Columbus, Ohio: Ohio State University, 1932, 376 pp., \$3.00.

For the third successive year, the Ohio State University was the host, last June, to the energetic group of directors of college and university radio stations, teachers, administrators, research students, educational directors of broadcasting companies, and visiting radio enthusiasts from many states and countries who regularly devote several days of the early summer to more or less temperate discussions of all the problems of radio in education. These meetings, under the guidance of the indefatigable research director of the Ohio State University, Dr. W. W. Charters, have become an annual

event of such significance that active workers in this new field of education are obliged to attend if they wish to keep in close touch with the range of experience and the currents of thought in their specialty. The proceedings of the third Institute are now available in the usual well-edited and attractive black and gold volume, which contains not only all the prepared addresses but verbatim reports of the discussion from the floor following each paper. This year the papers are presented not chronologically, but organized in five sections dealing respectively with national aspects of radio in education, broadcasting techniques, school broadcasting, experimental measures, and foreign broadcasting. A mere list of the speakers and subjects under each of these headings, were space available, would suggest the scope, catholicity, and earnestness with which this group is accustomed to debate the problems of extending the use of radio along cultural lines and improving the techniques of preparation, transmission, and reception of educational broadcasts.

C. L.

PERSONALITY. By Majorie Barstow Greenbie. New York: Macmillan, 1932, xiii + 328 pp., \$2.25.

CIVILIZING OURSELVES. By Everett Dean Martin. New York: W. W. Norton, 1932, xi + 329 pp., \$3.00.

These seemingly dissimilar books have a common interest in evaluating the aspirations of man under older cultures as compared with the objectives and purposes which are now reasonably and sensibly valid for the individual.

Mrs. Greenbie essays a nominally more modest task, although a timely one, in trying to bring the processes of the cultivation of personality under dispassionate and scholarly scrutiny. Intrigued by the blattancy of "personality development" courses of all sorts, she has sought the vital and permanent qualities with which such courses are, under varying vocabularies, concerned and which moreover are observable in the lives of great personalities throughout history. "How is it that certain personalities have emerged from ob-

scurity and have become widely known and believed?" Her answer may not satisfy the technical psychologist, and she makes no pretense of using the apparatus of objective measurement. But there are a wholesome sanity and breadth of view here which give the book a unique value, which in the truest sense is not unscientific.

Emphasis is placed on the basic problems of health and physical well-being, of the dynamic rôle of love both as emotion and sentiment, and on the special attributes of leaders. Any intelligent person, and especially the educator or leader of people, will find a stimulation in these pages which without pedantry and with real insight are outlining the issues at the very core of effective living.

Mr. Martin is concerned with "intellectual maturity in the modern world" and the ways of reaching it. His approach is extensively historical as to where present ideas and outlooks have come from and what is wrong with them. The emphasis is highly critical and the underlying tone more devastating than perhaps the author intends. For in his preface he valiantly pronounces that "the spiritual life as personal integrity and mental maturity in an environment of culture, appropriating to itself the best in that culture, attaining self-mastery through its disciplines, and in turn acting upon it with a reasoned hierarchy of values, is something not only wholly consistent with a secular civilization, but positively essential to it."

Yet Mr. Martin prophesies that "the hour of the great crowd tyranny awaits." And the only hope of the "intelligent minority" is to endeavor to keep "alive in the world a sense of values to which the mass must finally turn."

These books are to me significant of a yeasty striving and groping toward some new secular synthesis of human values. They are both looking in the same direction with wholly different details. They are gratifying indications of that new orientation, emphasis and impassioned undertone in present living which in the non-material realm will surely lead to a greater control by mankind of its own destiny.

O. T.

ALCOHOL AND MAN: THE EFFECTS OF ALCOHOL ON MAN IN HEALTH AND DISEASE. Edited by Haven Emerson. New York: Macmillan, 1932, 451 pp., \$3.50.

A group of experts here bring together just about all the known facts concerning the effect of alcohol on man. They take no sides; neither "wet" nor "dry" is mentioned. On the contrary, it is the author's purpose to present only objective information, as a start toward clearing up much of the muddled, emotional thinking regarding the legislative control of alcohol.

Various sections deal with such topics as "Alcohol and Longevity, Mortality, and Morbidity," "The Effect of Alcohol on Man's Conduct and Mentality," "Alcohol as a Medicine," and "Alcohol and Body Resistance."

Highest commendation is deserved by this successful attempt to put before laymen the real facts of alcohol.

R. E.

CHARACTER IN HUMAN RELATIONS. By Hugh Hartshorne. New York: Scribner's, 1932, xiv + 367 pp., \$2.50.

Dr. Hartshorne, whose extensive researches make him eminently qualified to write a book on character, divides his subject into four sections. In part one he describes and evaluates existing methods and efforts at building character, and in

part two discusses the various theories of character and proposes a general theory which seems to fit best the facts now available. In the concluding sections are explained the pragmatic value of character in the art of achieving a rich and effective life and suggests improvements and extensions of the present methods of building character.

Serious students of character education can ill afford to be without this book.

O. H.

ADMINISTRATION OF THE TESTING PROGRAM.

By Clifford Woody and Paul V. Sangren. Yonkers, New York: World Book, 1933, xi + 397 pp., \$2.00.

Addressed to the practical school administrator, this book aims to serve as a complete manual for conducting well-rounded testing programs. The authors cover in detail the organization of the program from its inception to setting forth and applying its results. There is especially complete treatment of methods of tabulating and interpreting test results. Not only does the book give administrative details, but it also tries to give something in the way of background which is necessary for understanding and appreciation of the uses and limitations of tests.

The book fills a genuine need.

R. E.

New Books

MANAGEMENT AND ADMINISTRATION

LABOR PROBLEMS. By Frank Tracy Carlton: Boston: Heath, 1933, 466 pp., \$2.60.

PERSONNEL ADMINISTRATION: ITS PRINCIPLES AND PRACTICE. (3rd revised edit.) By Ordway Tead and Henry C. Metcalf. New York: McGraw-Hill, 1933, 533 pp., \$4.00.

GUIDANCE

FINDING A JOB DURING THE DEPRESSION.

By Harry Dexter Kitson. New York: Robert C. Cook Co., 1933, 32 pp., \$25.

TALENTS AND TEMPERAMENTS: THE PSYCHOLOGY OF VOCATIONAL GUIDANCE. By Angus Macrae. New York: Appleton, 1933, pp., \$2.00.

THE DISABLED MAN AND HIS VOCATIONAL

ADJUSTMENT. By Roy N. Anderson. New York: Institute for the Crippled and Disabled, 1932, 102 pp., \$1.00.

EDUCATION AND TRAINING

EDUCATIONAL PSYCHOLOGY. By H. L. Hollingworth. New York: Appleton, 1933, 540 pp., \$3.00.

PROBLEMS OF EDUCATION IN THE UNITED STATES. By Charles H. Judd. New York: McGraw-Hill, 1933, 225 pp., \$2.50.

ECONOMICS

A NEW PLAN FOR UNEMPLOYMENT RESERVES: BASED ON MINNESOTA EMPLOYMENT DATA. By Alvin H. Hansen and Merrill G. Murray. Minneapolis: University of Minnesota Press, 1933, 75 pp., \$1.00; pap., \$.50.

- DISPLACEMENT OF MEN BY MACHINES: EFFECTS OF TECHNOLOGICAL CHANGE IN COMMERCIAL PRINTING.** By Elizabeth F. Baker. New York: Columbia University Press, 1933, 306 pp., \$3.50.
- ESSENTIALS OF A PROGRAM OF UNEMPLOYMENT RESERVES.** New York: National Industrial Conference Board, 1933, 77 pp., apply.
- INDUSTRIAL PENSION SYSTEMS IN THE UNITED STATES AND CANADA.** By Murray W. Latimer. New York: Industrial Relations Counselors, 1933, 1216 pp., \$10.
- JOB INSURANCE.** By John B. Ewing. Norman, Oklahoma: University of Oklahoma Press, 1933, 263 pp., \$2.50.
- SHORTER WORK PERIODS IN INDUSTRY.** New York: National Industrial Conference Board, 1932, 66 pp., \$1.00.
- THE DECLINE OF EMPLOYMENT IN THE 1930-1931 DEPRESSION IN ST. PAUL, MINNEAPOLIS, AND DULUTH.** By Alvin Hansen, and others. Minneapolis: University of Minnesota Press, 1932, 34 pp., \$50.
- UNEMPLOYMENT IN BUFFALO, NOVEMBER 1932.** By Frederick E. Croxton. Albany, N. Y.: New York State Department of Labor, 1932, 49 pp., apply.
- PSYCHOLOGY
- ADJUSTMENT AND MASTERY: PROBLEMS IN PSYCHOLOGY.** By Robert S. Woodworth. New York: Century, 1933, 142 pp., \$1.00.
- IN PLACE OF PROFIT: SOCIAL INCENTIVES IN THE SOVIET UNION.** By Harry Frederick Ward. New York: Scribner, 1933, 476 pp., \$2.50.
- KNOWING AND HELPING PEOPLE.** By H. W. Dresser. Boston: Beacon Press, 1933, 277 pp., \$2.50.
- SELF-CONSCIOUSNESS AND ITS TREATMENT.** By Abraham A. Roback. Cambridge, Mass.: Sci-Art Publishers, 1933, 122 pp., \$1.50.
- SOCIAL BELIEFS AND ATTITUDES OF AMERICAN SCHOOL BOARD MEMBERS.** By Claude E. Arnett. Emporia, Kan.: Author, 1715 Rural St., 251 pp., \$1.50.
- SOCIOLOGY
- INDUSTRY AND SOCIETY: A SOCIOLOGICAL APPRAISAL OF MODERN INDUSTRIALISM.** By Arthur J. Todd. New York: Holt, 1933, 639 pp., \$3.00.
- RURAL SOCIAL TRENDS.** By Edmund de Schweinitz Brunner and James H. Kolb. New York: McGraw-Hill, 1933, 395 pp., \$4.00.
- THE GREAT TECHNOLOGY: SOCIAL CHAOS AND THE PUBLIC MIND.** By Harold O. Rugg. New York: John Day, 1933, 322 pp., \$2.50.
- THE PROPAGANDA MENACE.** By Frederick E. Lumley. New York: Century, 1933, 463 pp., \$4.00.

Current Periodicals

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AGE—BIBLIOGRAPHY

SHERA, J. H. (Bibliographer, Scripps Foundation for Research in Population Problems). Age factor in employment; a classified bibliography. *Bulletin of Bibliography*, May-Aug., Sept.-Dec., 1931; Jan.-Apr., May-Aug., Sept.-Dec., 1932, vol. 14, p. 100-101; 128-129; 154-156; 175-177; 193-195.

References are classified under: Present situation and its causes; Physiological and psychological aspects of the problem; Outlook for the future; and, Bibliographies. In the first group is listed material on statistical and source data on the extent of old age dependency, and degree of discrimination against the older worker, as well as references to case studies of individual situations and general discussions. Under the third group references are given to suggested remedies, general outlook and relief measures adopted by individual employers. A supplementary list of materials that have appeared since publication began is included. Arrangement is alphabetical by author, under each subject, with some annotations.

BARTER

Self-help among the unemployed—the return to barter. *Information Service*, Jan. 28, 1933, vol. 12, p. 1-4.

Describes the work of ten typical organizations organized by the unemployed in different cities and states, in an endeavor to obtain food, clothing, fuel, etc. in exchange for service, or other goods.

DISMISSAL WAGE

HAWKINS, EVERETT D. Suggested plan for a company dismissal compensation program. *Industrial Relations*, Dec. 31, 1932, vol. 3, p. 696-699.

Plan is based on experience of approximately 180 companies which were visited in 1932, and is a composite of the successful parts of the plans in use. The first suggestion is that of transfer, wherever possible, keeping as many of the employees as long as possible. In this suggested plan all employees who have been with the company one year are eligible, the amount of compensation dependent on so many weeks' wages, and the money to be paid in a lump sum. It is suggested that the cost of financing the plan be charged to general operating expense of that particular part or section of the plant. In case of re-employment, the employee may either repay the compensation (if he is rehired within a period equal to or less than the number of weeks of compensation); or start as a new employee with no service record.

EMPLOYMENT

HURLIN, RALPH G. (Russell Sage Foundation). Some occupational changes from 1870 to 1930. *Personnel Journal*, Feb., 1933, vol. 11, p. 280-288.

Gives the percentage of increase since 1870 of those gainfully employed, in the various occupational groups. Clerical service has increased at a rapid rate, representing 8.2 per cent of total number occupied in 1930. Public service, professional and semi-professional service have increased from 5 per cent of total in 1870 to 16.1 per cent in 1930. The proportion of those gainfully employed over 45 years of age has remained about 52 per cent of total at each census since 1890. Women workers have increased from 14.8 per cent to 22 per cent of total during this period.

EMPLOYMENT EXCHANGES

CRAFTS, MABEL E. (Public Employment Center of Rochester). Placement follow-up of women. *Personnel Journal*, Feb., 1933, vol. 11, p. 325-336.

Analysis of placements in the Domestic Service Section of the Rochester Employment Center for a six-month period, and in the Industrial Section for over a year. Three-fourths of persons placed in domestic service were rated "satisfactory" by employers. In making satisfactory domestic placements it was found that elements of personality played a very important part on both sides. In the Industrial Service placements, only 5 per cent were rated "unsatisfactory." Voluntary resignations in the Industrial Section were limited to 11 per cent, only one-third of the number in the Service Section. Only 57 per cent of service applicants were under 35 years of age, while 81 per cent of industrial applicants were in this age group. A form letter of a semi-personal type was sent to each employer, with headings for recording items of information concerning the employee on the reverse.

GILL, GEORGE E. (Indianapolis Employment Bureau). Serving worker, employer and community. *Personnel Journal*, Feb., 1933, vol. 11, p. 337-343.

A history of the Indianapolis Employment Bureau, which performs two functions, that of an employment agency and a community welfare organization. Accurate and detailed records of all applicants for work are kept. Gives general information of the work of the bureau, particularly its service to those who have become discouraged, encouraging them to improve themselves and prepare for other jobs.

GROUP INSURANCE

GRAHAM, WILLIAM J. (Vice President, Equitable Life Assurance Society of the United States). Group life insurance; historical background, definition and developments. *Industrial Relations*, Dec. 31, 1932, vol. 3, p. 706-712.

Outlines to 1931 the development of

group insurance since the inauguration of the department of group insurance, January 1, 1912, by the Equitable, when \$9,954,011,233 worth of group insurance was in force, with about one hundred companies now writing this form of insurance, and covering about 6,500,000 employees.

HOURS OF WORK

Legal restrictions on hours of labor of men in the United States as of January 1, 1933. *Monthly Labor Review*, Jan., 1933, vol. 36, p. 1-10.

Gives data on existing legislation, with a review of the decisions of the Supreme Court of the United States on the constitutionality of such legislation.

This article brings up-to-date the material published on the subject in the January, 1929, issue.

INDUSTRIAL RELATIONS

HAWKINS, EVERETT D. (Princeton University) and JAY W. BLUM. Statistical review of 1932, prepared for industrial relations executives. *Industrial Relations*, Dec. 31, 1932, vol. 3, p. 677-695.

Lists occupations in which gains and losses in employment have been recorded, in comparison with 1920. The total number of women gainfully employed has increased 20.5 to 22 per cent. A review of a study made by the Merchants Association of New York showed that over 80 per cent of companies granted vacations with full pay to salaried workers, and over 60 per cent did the same for hourly workers. Results are also given on other vacation studies. Statistical summaries by states, of employment and payrolls in manufacturing and non-manufacturing industries, and hourly and weekly earnings are included. In relation to cost of living and reduced purchasing power, it was found that earnings declined 25.3 per cent from 1931 to 1932, while the reduction in living costs amounted to scarcely 10 per cent. The American Federation of Labor reported 2,532,261 members in 1932, over 350,000 less than in 1931. Graphs and tables supplement the text.

LABOR LEGISLATION

CHENEY, ALICE S. (Washington Branch, International Labour Organization). Comparison of convention provisions with labor legislation in the United States. *Annals of the American Academy of Political and Social Science*, Mar., 1933, vol. 165, p. 176-189.

Compares the protective prohibitions of the International Labour Office with those of the United States. Under this type of legislation it was found that the standards set by the laws of the United States and in force in most of the states, are quite commonly lower. The second group compared includes the regulatory laws and conventions. Study of these revealed that the laws of the United States set standards lower than those established by the conventions. In comparing compulsory insurance laws and conventions it was found that in the United States compensation is provided only for accidents and industrial diseases. Since the governments belonging to the I. L. O. ratify conventions, these standards are enforced in a great majority of the countries.

PROFITS

EPSTEIN, RALPH C. Industrial profits in prosperity and depression 1919-1932. *Bulletin, National Bureau of Economic Research, Inc.* no. 44, Jan. 27, 1933, p. 1-4.

Summarizes the 10-year earning rates for 106 manufacturing, trading, financial and mining industries as follows: the the lowest industry earns about 2 per cent; the highest 32 per cent. One-quarter of all industries earn under 10.6 per cent and the median return on invested capital is 12.55 per cent. It is concluded that "the approximate equality of return upon capital in different competitive industries, which economic theory has long assumed takes place over a period, is not at all realized."

RESEARCH

BROWNE, HAROLD F. (National Industrial Conference Board). Why industrial relations research?—a question of fact find-

ing vs. fact fighting. *Industrial Relations*, Dec. 31, 1932, vol. 3, p. 671-673.

Explains how industrial research can be invaluable to the employer by making available for his use data on policies found desirable or not acceptable in other companies, such as cost, efficiency of various operations, effect of certain projects on employee morale, etc. Outlines policy of National Industrial Conference Board in preparing a study for publication.

SALARIES

How 25 companies are paying their salesmen this year. *Class and Industrial Marketing*, Jan. 1933, vol. 23, p. 21-23. (Abstract in *Management Review*, Feb. 1933, Vol. 22, p. 58.)

A survey of twenty-five companies in industrial fields showed that in the beginning of 1933 three of the companies were paying straight commission; seven salary and commission; five salary with bonus, and seven did not have a standardized plan.

SCIENTIFIC MANAGEMENT

PERSON, H. S. (Managing Director, Taylor Society). Scientific management and economic planning; a philosophy and technique of progressive industrial stabilization. *Bulletin of the Taylor Society*, Dec., 1932, vol. 17, p. 204-228.

Traces and discusses the successive stages in the development of scientific management as a stabilizing force in the individual workplace, the shop, marketing and general administration. The second part deals with the stabilization of an industry, stabilization of national industry, and international stabilization of industry. Believes that national planning is not only the order of the day, but is in process of evolution. The question is whether "planning shall be delegated to industry itself in some form of self-government, with anti-trust legislation modified for that purpose, or to some body representing citizenship in its more inclusive interests."

TESTS

NESTOR, JACOB-MARIUS (Assistant in the Psychological Institute of the University

of Bucharest). Vocational tests on the European railways: I, II, *Human Factor*, Jan.-Feb., 1933, vol. 7, p. 11-23; 51-58.

Describes methods in use for selecting apprentices, engineers, clerks, etc. for nine European state railroads. Actual tests are included. Much detailed information is given, including the results achieved and showing that operating efficiency and test results agreed in over 90 per cent of cases tested. A resultant decrease of 40-50 per cent in accidents was also noted.

TRADE UNIONS

BARNETT, GEORGE E. (Johns Hopkins University). American trade unionism and social insurance. Presidential address delivered at the forty-fifth annual meeting of the American Economic Association, Cincinnati, Ohio, December 29, 1932. *American Economic Review*, Mar., 1933, Vol. 23, p. 1-15.

During previous periods of prosperity trade union membership increased, but from 1924-1929 the membership, which had already dropped to 3½ millions, remained practically the same. The author believes that the failure to increase is partly due to shifts in occupational groups, (the gain in trades in fields where trade unionism has established itself being only 10 per cent of the increased number of gainful workers); and partly to the development of such factors as displacement of skilled workers by machinery, etc. He believes that the adoption of compulsory social insurance would help improve the bargaining power of labor, and offset, to some extent, the failure of the trade unions to expand, since the trade union has been supposed to be an influence in determining the conditions of labor and in developing a sound economic structure.

TRAINING—FOREMEN

COWDRICK, EDWARD S. Foreman training in American industry. *International Labour Review*, Feb., 1933, vol. 27, p. 207-219.

This article gives a general account of the results of a survey of foreman train-

ing made by Mr. Cowdrick in 1931. He discusses, first, the development of foreman training, which began about the time the United States entered the World War. The purposes of the training, the subjects taught, the methods of instruction and the agencies of the company through which the instruction was given, are reviewed. Eight specific benefits which foreman training has brought to companies are described.

UNEMPLOYMENT INSURANCE

HARRISON, GEORGE M. (President, Brotherhood of Railway Clerks). Unemployment reserves for the transportation industry. *American Federationist*, Mar. 1933, vol. 40, p. 246-251.

Analyzes five major differences between railroads and other industries which make the unemployment problem distinct from the other groups. The character of the service required, whether utilized or not; seniority rights in layoffs; the lack of similar jobs in other industries, to absorb displaced engineers, signalmen, etc., are examples of these differences, which, according to Mr. Harrison, make special consideration of the railroad unemployment problem necessary. He also discusses the kind and quantity of railway unemployment, and outlines two types of reserves to care for the employees in the older group (those with certain years of service), who should be guaranteed continuous employment, and for those in the fluctuating group, who should receive something less than full wages for a limited period during periods of unemployment. Suggests that an adequate fund be created, built up from setting aside a certain percentage of payrolls.

Operation of unemployment-benefit plans in the United States during 1931 and 1932; part 1, Company and joint agreement plans; part 2, Trade-union plans. *Monthly Labor Review*, Dec., 1932; Jan., 1933, vol. 35; 36, p. 1225-1251; 11-31.

These two articles cover the experiences of all firms maintaining unemployment benefit funds or guaranteeing employment, and trade unions paying unem-

ployment benefits, during 1931 and 1932, supplementing the study made and published by the United States Labor Statistics Bureau on unemployment benefit plans in 1931. At the present time there are fourteen companies, including two established during 1932. The plans of Brown and Bailey, Leeds and Northrup, and Consolidated Water Power and Paper Company have been discontinued, and the funds of Dennison Manufacturing Company have been exhausted. Detailed information is given concerning these seventeen company plans. In the trade unions, three of the joint agreements have been discontinued and four local trade union plans have been forced out of operation. A detailed description of both national and local plans is included.

MERIAM, R. S. (Harvard Business School). Some theoretical aspects of unemployment reserves. *American Economic Review Supplement*, Mar., 1933, vol. 23, p. 23-30.

Presents theoretical aspect of "maximizing unemployment prevention and avoiding mixture of unemployment reserves and poor relief." Discusses the incidence of employers' contributions, and whether unemployment benefits will pay for themselves. Believes if unemployment reserves are to eliminate all traces of relief, the only possible basis is that of deposits or savings, from which the unemployed could draw only the amount in his account.

UNEMPLOYMENT RELIEF

BURNS, E. M. (Columbia University). Economics of unemployment relief. *American Economic Review Supplement*, Mar., 1933, vol. 23, p. 31-43.

Discusses economic requirements which must be kept in mind in providing relief, and analyzes proposals for the establishment of unemployment reserves. He describes in some detail the four current

views concerning these requirements for unemployment relief: a scheme designed to reduce volume of unemployment, establish employment offices, etc.; a plan to force employers to stabilize their demand for workers; a scheme which shall not aggravate the existing situation through its effect on workers, employers or the government; and, a system that should at least protect those footing the bill by setting a limit to their liability.

UNEMPLOYMENT SURVEYS

CROXTON, FREDERICK E. (Columbia University). Analysis of the Buffalo, N. Y. unemployment surveys, 1929 to 1932. *Monthly Labor Review*, Feb., 1933, vol. 36, p. 282-294.

Results of the 4th annual study showed that unemployment was least among those thirty-five and forty years old in 1931 and 1932, and among those thirty-five and under sixty in 1930. Data also showed that the duration of unemployment was longer in 1932 than in 1931, and longer in 1931 than in 1930. Of all the males engaged in trade and transportation, 53.3 per cent were working full time, 21.2 per cent part time, and 25.5 per cent were unemployed in 1932. In manufacturing and mechanical pursuits, 28.5 per cent were employed, 29.9 per cent were working part time, and 41.6 per cent were out of work. Part-time employment was greatest in the manufacture of iron and steel, which showed 44.9 per cent on part time. The greatest number of unemployed was found among the wage earners in the building trades, 65.8 per cent having been reported out of work. Among the women, 29 per cent in the domestic and personal service groups were unemployed, 27.4 per cent were on part time, and 43.6 per cent were on full time. In retail and wholesale trade 60 per cent had full-time work.

Interest Maturity

By EDWARD K. STRONG, JR., *Stanford University*

The more we know about the nature of people's likes and dislikes for different sorts of activities and occupations, the more effectively we can suggest appropriate lines of training and development.

In this and in subsequent articles, new light is thrown on the changes of interests that occur as young people mature, on the differences between men and women in their occupational interests, and on the reasons why certain clusters of occupations resemble or differ from each other in respect to the likes and dislikes of the men who engage in them.

Interest maturity has reference to the degree to which one has the interests of 55 year old men of superior education and occupational attainment, in contrast to the interests of the typical 15 year old boy. A scale for measuring interest maturity is constructed from data obtained by the Strong Vocational Interest Blank. Reliability of the scale is about .95. Correlation between interest maturity and age is .74 with an age range of 15 to 55 years, and .47 when the subjects range only from 15 to 20 years of age. Interest maturity correlates .10 with scholarship and age, and $-.06$ with intelligence in the case of Stanford University seniors.

INTEREST maturity," as here used, refers to the quantitative measurement of change of interests with age, and expresses the degree to which one has the interests of 55 year old men as compared with those of 15 year old boys.

It has been previously shown that the interests of men between the ages of 25 and 55 are essentially alike. Some relatively slight differences, however, were found between the interests of men at the four age levels of 25, 35, 45, and 55 years. In other words, there are certain things which are

liked more and some which are liked less with advancing years.¹

The study of change of interests with age has now been extended to include the range from 15 to 65 years. It now appears that there is a noticeable change in interests during the decade from 15 to 25 years. There is about the same amount of change between 15 and 20 years as between 20 and 55 years; there is also about the same amount of change between 20

¹ E. K. Strong, Jr., *Change of Interests with Age*, Stanford University Press, 1931.

and 30 years as between 30 and 55 years.

This report discusses the development of a scale whereby one's interest maturity may be measured and the relationship ascertained between interest maturity score and general intelligence, age, and amount of education. In a subsequent article,² the effect of interest changes upon occupational interest scores will be considered; also, what may possibly be three of the five factors underlying occupational interests. In connection with the discussion of these last two points, a classification of occupations in terms of the interests of the successful men in them is presented.

The concept of interest maturity must be defined in terms of the procedure used to measure such changes in interest, and also, in terms of the findings as to how these changes are related to other factors, such as general intelligence, age, scholarship, and various occupational interests.

DEVELOPMENT OF INTEREST MATURITY SCALE

The sampling of individuals used as the basis for a scale is very important. In this case it is unfortunately impossible, at least at this time, to obtain data from 15 and 55 year old men who are equally representative of their age groups. This difference in the two samplings must be remembered in interpreting interest maturity scores.

Great care was taken in the selection of the 15 year old group to obtain a distribution that was equivalent to

that found among all boys of their age in California, as far as school grade was concerned. The average school grade of the group is 9.4 grade. Our success in this respect is shown in table 1. We did, however, ignore 5.08 per cent reported below the 7th grade and .20 per cent above the 12th grade. It is believed that a large proportion of the 5.08 per cent are to be explained by the abnormal presence here of 102,405 Mexican children un-

TABLE 1

Composition of 15 year old group, according to school grades, in comparison with distribution of 15 year olds in schools of California

SCHOOL GRADE	15 YEAR OLD SCHOOL CHILDREN IN CALIFORNIA		15 YEAR OLD GROUP	
	Total	Per cent	Total	Per cent
7	4,302	6.83	31	6.5
8	9,703	15.40	73	15.5
9	18,674	29.64	140	29.7
10	19,944	31.65	150	31.8
11	8,844	14.04	66	14.0
12	1,539	2.44	12	2.5
Total...	63,006	100.00	472	100.0

der 18 years of age out of a total of 1,209,137 children. Another reason for such exclusion was that those of this age below the 7th grade would have been unable to fill out the vocational interest blank used as a basis for the study.³

The 55 year old group was selected so as to include as wide a variety of

² E. K. Strong, Jr., *Classification of Occupations on Basis of Interests*. *Personnel Journal*, forthcoming number.

³ From our experience it appears that the Vocational Interest Blank cannot be used successfully below age 15. Many boys of this age in the 7th grade required individual aid, for much of the terminology was incomprehensible to them.

occupational interests as possible (see table 2). Actually, blanks of all 55

TABLE 2
Occupational composition of 55 year old group

	N
<i>Group I:</i>	
Architect.....	17
Artist.....	26
Engineer ¹	30
Mathematician.....	30
Physician ²	38
Physicist.....	30
Psychologist.....	30
Miscellaneous.....	12
Total.....	213
<i>Group IIa:</i>	
Advertiser.....	3
Author.....	20
Lawyer.....	34
Newspaper editor.....	36
Total.....	93
<i>Group IIb:</i>	
Life Insurance salesman.....	24
Real estate salesman.....	9
Miscellaneous.....	14
Total.....	47
<i>Group IIIa:</i>	
Minister.....	50
Teacher.....	33
Total.....	83
<i>Group IIIb:</i>	
City school superintendent.....	30
Personnel manager.....	21
Y. M. C. A. Secretary.....	17
Total.....	68
<i>Group IV:</i>	
Purchasing agent.....	11
Miscellaneous.....	24
Total.....	35

TABLE 2—*Concluded*

	N
<i>Group V:</i>	
Certified public accountant.....	13
<i>Miscellaneous:</i>	
Hotel manager.....	17
Business manager.....	15
Miscellaneous.....	48
Total.....	80
Grand Total.....	632

¹ Actually based on 27 mining, 25 civil, 23 electrical and 25 mechanical engineers but reduced proportionately to equal 30.

² Actually based on 76 and reduced to equal 38.

year old men were included, except where we had over 30 in an occupation. In such cases approximately 30 were used. But in order to give greater representation to groups II and III⁴ more than 30 were included in, four cases.

The 55 year old group is representative of successful men, for nearly all the blanks have been secured on that basis for some occupational criterion group. It is furthermore representative of professional men and staff men in business, but contains few line executives from business, practically no skilled workers and no unskilled men. How the interest maturity scale would be affected by inclusion in the 55 year group of proper representation of unsuccessful men on the one hand, and of small shopkeepers and of skilled and unskilled workers, on the other hand, is unknown.

⁴ The five occupational groups are exemplified in table 2 and discussed in more detail in the article to follow entitled "Classification of Occupations on Basis of Interests."

The interest maturity scale, based on these two samplings of 15 and 55 year old men, expresses changes in age and education; also, to an unknown degree, differences between 15 year old boys, as found in California schools, and the more successful men engaged in the better paid and socially more approved professions and business activities. It is unfortunate that there must be this complication. The scale, as it stands, has, however, real value for guidance purposes as it measures changes in interest toward those possessed by superior men.

Differences in Liking Items at 15 and 55 Year Age Levels. A number of items are listed in table 3 with the per cent of 15 and 55 year olds who like them, together with the differences between the two; also the scoring weights which express the differences, as used in the interest maturity scale. The greatest difference occurs with the item "can write a concise, well organized report." This item occurs in the last section of the Vocational Interest Blank and here the individual reports "present ability" rather than "liking." Seventy-six per cent of the older men believe they can write such a report while only 17 per cent of 15 year old boys have a like confidence.

The differences between the items in table 3 illustrate some of the findings previously reported where differences between 25 and 55 year old men were considered.⁵ For example, older men are not so interested in physical skill and daring, nor in change or interference with established habits or customs, nor in most amusements. On

the other hand there is relatively little change with age in respect to reaction toward types of people. Apparently such attitudes are established very early and remain fixed for the most part throughout life.

Among the 420 items, 257 increase in liking with age, 157 decrease in liking, and 6 items show no change. Naturally one cannot "like" an item before experiencing what the item stands for. When forced to express like, indifference, or dislike for the unknown, individuals usually report that they are either indifferent to it or dislike it. Thus, among 15 year old boys, who cannot have studied economics, 46 per cent state they are indifferent to it and 45 per cent dislike it. In the case of "psychology," 41 per cent react by checking indifference and an equal number by checking dislike. After experience, say at 25 years of age, 60 per cent like economics, 10 per cent are indifferent, and 30 per cent dislike it. In the case of psychology, 76 per cent like it, 4 per cent are indifferent and 20 per cent dislike it. In the period from 15 to 25 years of age there is an increase for these two items of 54.5 per cent in liking and a decrease of 18 per cent in disliking. This phenomenon explains in part the fact that there are 100 more items that increase in liking from 15 to 55 years of age than of items that decrease in liking during this period.

Development of Interest Maturity Scale. In developing scoring weights for occupational interests, a given occupational criterion group is contrasted with the interests of "men in general." Because of the great variety of reactions to the items on the

⁵ E. K. Strong, Jr., *op. cit.*

TABLE 3

Examples of differences in liking items between 15 and 55 years of age

RANK ORDER	ITEM NUMBER	ITEM	PER CENT WHO LIKE THE ITEM			SCORING WEIGHT
			15 year olds	55 year olds	Diff.	
1	398	Can write a concise, well organized report ¹	17	76	59	3
2	166	Economics	9	60	51	3
3	391	Can discriminate between more or less important matters ¹	40	90	50	3
4	185	Psychology	18	68	50	3
5	370	Nights spent at home vs. away from home	33	82	49	3
6	182	Philosophy	16	63	47	3
7	212	Teaching adults	9	56	47	3
64	326	Wm. H. Taft ²	8	34	26	2
65	318	Co-workers, congenial, competent, and adequate in number ²	8	33	25	2
66	402	Put drive into organization ¹	23	48	25	1
67	236	Continuing at same work, etc.	57	82	25	1
68	187	Public speaking	20	45	25	1
69	193	Zoology	23	48	25	1
70	161	Botany	20	44	24	1
258	44	Interpreter	12	12	0	0
259	20	Cartoonist	25	25	0	0
260	116	Playing a musical instrument	39	39	0	0
261	250	People who borrow things	2	2	0	0
262	255	People who assume leadership	35	35	0	0
263	265	People who get rattled easily	6	6	0	0
394	361	Change from place to place vs. work in one location	36	13	-23	-2
395	300	Operate the new machine ²	68	44	-24	-1
396	360	Outside work vs. inside work	65	40	-25	-1
397	121	Amusement parks	41	16	-25	-2
398	151	Cowboy movies	47	21	-26	-1
399	7	Athletic director	42	16	-26	-2
400	139	Sporting pages	57	31	-26	-1
414	322	Henry Ford ²	69	34	-35	-2
415	12	Auto racer	39	3	-36	-3
416	86	Secret service man	47	10	-37	-3
417	368	Playing baseball vs. watching baseball	69	29	-40	-2
418	311	Opportunity for promotion ²	65	24	-41	-2
419	103	Hunting	86	41	-45	-3
420	14	Aviation	63	17	-46	-3

¹ From last section of blank; subjects are asked to "indicate what kind of a person they are right now and what they have done." Replies are "Yes," "Not sure," and "No," instead of liking, indifference, and disliking.

² First 3 and last 3 preferences asked for from among 10.

blank by the various occupational groups, the average of "men in general" affords an excellent basis from which to measure group idiosyncrasies. Age scales for ages 25, 35, 45 and 55 years have been worked out on this basis; namely, by contrasting the interests of men at these ages with "men in general." But as our "men in general" averaged 37.4 years of age, such comparisons necessarily gave a difference of 12.4 years between the 25 year group and "men in general," a difference of 2.4 years for the 35 year group, a difference of 7.6 years for the 45 year group and a difference of 17.6 years for the 55 year group. This procedure produced some puzzling results.⁶

In consequence, comparison with "men in general" has been abandoned in this connection. Instead, the interests of 15 year olds have been directly contrasted with 55 year olds. The usual procedure has been followed except in this case the scoring weights range only from 3 to -3 and not from 15 to -15.⁷

Previous attempts to simplify the weighting systems of occupational scales have not been successful for although simplified systems correlated very highly with the standard system and gave as high, or slightly higher reliability, yet the simplified systems failed to differentiate between occupational groups as well as did the standard procedure.⁷ But in the case of

this interest maturity scale, it has been found that a scale with weights ranging between 3 and -3 correlates .993 with the standard weighting system ranging between 15 and -15. Furthermore, the reliability and validity of the former are fully equal to the latter. Since the 3 to -3 weighting system can be scored by hand in much less time than the 15 to -15 system, it has been adopted.

There results, accordingly, a scoring weight for liking, indifference to, and disliking each of the 420 items on the Vocational Interest Blank (see table 3 for examples). The weights express the differences in reaction of the two age groups. They range between 3 and -3 according to whether 55 year old men like the item more than 15 year old boys, or the reverse. (Plus weights for indifference or for dislike, similarly mean that more 55 year old men are indifferent to, or dislike, the item than 15 year old boys.)

The total of all the 420 weights assigned to a blank give the interest maturity score. These scores could conceivably range between 415 and -463. So far the highest and lowest scores actually obtained are 229 in the case of a 45 year old minister and -251 in the case of a 15 year old boy from the 8th grade.

Having established a method of measuring interest maturity, let us see how men of different ages will score in this respect.

DISTRIBUTION OF INTEREST MATURITY SCORES

The scores for interest maturity of 3165 males are given in table 4 where they are distributed according to age.

⁶ E. K. Strong, Jr., *op. cit.*, Chapter 8.

⁷ E. K. Strong, Jr., Procedure for Scoring an Interest Test, *Psychological Clinic*, vol. XIX, no. 2, April 1930 and E. K. Strong, Jr., and Helen J. Green, Short Cuts to Scoring an Interest Test, *Journ. Applied Psychology*, vol. XVI, no. 1, February 1932.

TABLE 4
Distribution of interest maturity scores by age, but expressed in percentiles

I.M. SCORE	15 YEARS	16 YEARS	17 YEARS	18 YEARS	19 YEARS	20 YEARS	21 YEARS	22 YEARS	23 YEARS	25 YEARS	30 YEARS	35 YEARS	40 YEARS	45 YEARS	55 YEARS	65 YEARS
230						100		100		100	100	100	100	100	100	100
210						99	100	99	100	99	99	99	94	97	96	98
190						99	99	98	99	98	98	92	83	88	79	94
170						99	98	98	97	96	94	84	72	77	65	81
150				100	100	99	98	98	93	93	90	75	67	57	53	62
130	100	99	99	99	98	98	95	95	86	83	67	61	49	37	37	53
110	99	99	98	96	96	95	91	90	81	75	72	49	50	37	26	36
90	99	99	96	94	90	91	87	90	81	75	72	49	50	37	26	36
70	98	99	94	90	83	83	79	80	71	62	60	33	44	28	16	23
50	96	96	88	85	71	68	63	68	64	46	48	23	44	17	10	15
30	94	89	82	77	60	58	52	54	52	36	34	13	33	8	9	9
10	93	85	75	70	50	46	41	41	44	22	25	9	28	1	6	4
-10	89	76	62	59	34	33	29	28	35	15	14	8	6	1	4	
-30	83	62	50	49	28	24	20	20	21	10	8	5			3	
-50	72	58	38	37	21	17	15	16	12	5	4	4			1	
-70	68	44	27	29	13	9	10	12	8	3	2	2				
-90	55	34	21	23	9	6	7	9	6	2	1	2				
-110	46	28	14	16	6	4	2	6	5	2		2				
-130	38	21	10	11	3	3	1	4	3	1		1				
-150	29	12	6	6	2	1		2								
-170	19	8	4	2	2											
-190	13	5	2	1												
-210	7	3	2	1												
-230	3	3														
-250	1	2														
Average	-90.3	-53.0	-23.9	-19.0	16.5	23.0	30.0	25.9	34.7	58.7	63.2	96.8	94.4	119.7	129.4	117.1
S.D.	74.6	71.8	73.2	75.6	68.0	64.4	63.8	67.2	71.6	61.8	60.4	65.0	74.8	54.2	63.8	48.7
Number	299	152	273	363	270	218	213	211	133	394	264	129	18	105	100	47

Averages with standard deviations for each age group are included. The averages are plotted in figure 1. The average for 15 year old boys is based upon 299 records carefully selected so that the percentage from each school grade agrees with the percentage reported for all 15 year old boys in California schools. This average is based then upon a truly representative sampling of 15 year olds. Without the expenditure of a great deal of time and money it would be impossible to obtain equally good samplings of the male population at each age level. Accordingly, we have abandoned such a program and have based the sampling upon the males found in high school and college up to the level of 25 years of age. From this age on we have utilized the records in our possession which are typical of men with about three years of college education and from the more socially approved occupations, as described above.

The noticeable increase in interest maturity score from 18 year olds (average of -19) to 19 year olds (average of 17) is largely due to the fact that the majority in the former group are in high school and the majority in the latter group are in college. The latter are a much more highly selected group and evidently such superiority is accompanied by greater interest maturity. The average interest maturity score for 25 year olds appears to be too high and that for 30 year olds to be too low. When the latter was noted, based upon 100 records, data from 50 more were obtained. Inclusion of the 50 did not change the average by as much as one point.

Variability in interest score is very

large compared with the total range of possible scores. This emphasizes that men of the same age differ greatly as regards interest maturity. Judging from the standard deviations given in table 4 there is little difference in this respect with age. As the 15 year group is typical of all boys of that age in school in California and so of nearly all boys in the state, and the older age groups are samplings largely of the better educated, it is to be expected that greater variation will be found in the older age levels when a wider sampling of older men has been obtained.

Percentiles. To save space, the distribution of actual scores has been replaced in table 4 by the appropriate percentiles. The very wide range of scores and the great overlapping between age groups suggest that there is little to gain at the present time by expressing interest maturity scores in terms of chronological age. For example, 5 per cent of 23 year olds have interest maturity of less than the average 15 year old and 7 per cent have interest maturity of more than the average 55 year old man. It would seem to be better procedure to express interest maturity in terms of percentile rating for the given age. Thus, an interest maturity score of -30 is to be interpreted as 50 percentile, if the male is 17 years old; 24 percentile, if he is 20 years old; 10 percentile, if he is 25 years old; and only 5 percentile, if he is 35 years old.

RELIABILITY

The coefficients of reliability for the Interest Maturity scale are reported in table 5. These were computed by

using the split-half method and applying the Spearman-Brown formula. The reliability based upon 15 year old boys alone, or upon 25-, 35-, 45-, and 55-year olds combined, is .93. If representatives from all ages from 15 to 55 years are included, the higher coefficient of .97 is obtained.

Either half³ (odd-even basis) of the blank has a reliability of about .93 (see table 5). Because of the high reliability of either half, it is quite

TABLE 5

Reliability of interest maturity scales (420 items); also of each half

Split-half technique, Spearman Brown formula

N	AGES CONSIDERED	SPLIT-HALF TECHNIQUE		
		ENTIRE BLANK	ODD ITEMS	EVEN ITEMS
100	15 year olds	.94	.87	.88
100	Selected equally from 25, 35, 45, and 55 year olds	.92	.83	.87
125	Selected equally from 15, 25, 35, 45 and 55 year olds	.97	.92	.94

feasible to develop two forms of the test, if such is desired. Each of course would require only half the time to fill out or to score. But they would require new blanks, suitable only for measuring interest maturity, whereas the entire blank may be scored for occupational interests, as well as interest maturity. If there is sufficient demand for these two 210-item forms they will be published.

³ As a matter of fact, the 420 items were so divided as to give as well balanced halves as possible, taking the nature of the items into account.

PERMANENCE OF INTEREST MATURITY

Records of one hundred Stanford freshmen correlate .80 in interest maturity with similar records filled out a year later. The lower correlation of .68 is obtained when 11th grade records are compared with those filled out the following year. When the occupational interest scores for engineering, medicine, ministry, law and public accounting are similarly handled and then the five correlations averaged there is obtained the correlation of .78 for the freshman-sophomore group and .68 for the 11th grade-12th grade group.

Over a five-year period the correlation for interest maturity of .69 is obtained when the records of 285 Stanford seniors of the class of 1927 are compared with records obtained from them in 1932. Inspection of the scatter diagrams indicates that if a few blanks were excluded the correlations would approximate .95. In the case of the 11th grade-12th grade group, 21 individuals from among 100 deviate widely in their two scores. If these boys did not take the task of filling out the blank seriously, a task they were required to do, this would account for the low correlation of .68.

RELATION OF INTEREST MATURITY TO AGE, AND AMOUNT OF EDUCATION

When calculations are based upon 285 Stanford seniors of the class of 1927, it appears that interest maturity has a slight positive correlation (about .10) with scholarship (i.e., grade point ratios) and age and has a slight negative correlation with Thorndike Apti-

tude scores (about $-.06$).⁹ This particular group has high intelligence, is very homogeneous as far as age is concerned, and is also far more homogeneous as regards scholarship than a random sampling.

If the correlation (Pearson) is based on the age groups from 15 to 20 years only, the coefficient between interest maturity and age is $.47 \pm .04$. When

(eta) as the regression is distinctly curvilinear (see Figure 1). Using 25 cases from each of the age groups, (15, 25, 35, 45 and 55 years), so selected as to give approximately the same averages and standard deviations as obtained from these five age groups, reported in table 4, the correlation ratio is $.74 \pm .02$. It must distinctly be remembered in this connection that

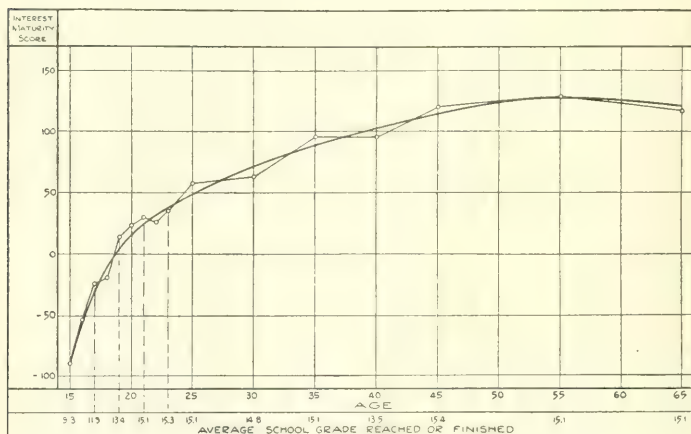


FIG. 1. AVERAGE INTEREST MATURITY SCORE ACCORDING TO AGE

the correlation is based on the entire age range from 15 to 55 years it is necessary to use the correlation ratio

⁹ It is probable that the real relationship between interest maturity and intelligence approximates zero correlation. The necessary data are not available to calculate it, however. Interest maturity correlates highest with the interest of ministers, teachers, etc. The interests of such occupations correlate from $.07$ to $-.19$ with general intelligence.

increasing age is accompanied here with increasing educational attainment.

The data included in table 4 and figure 1 are based upon three groups of subjects, first, 346 males whose educational records are not known and who are disregarded in what follows; second, 1938 males now in school; and third, 881 males who have left school. Data concerning the last two groups are given in tables 6 and 7 where they

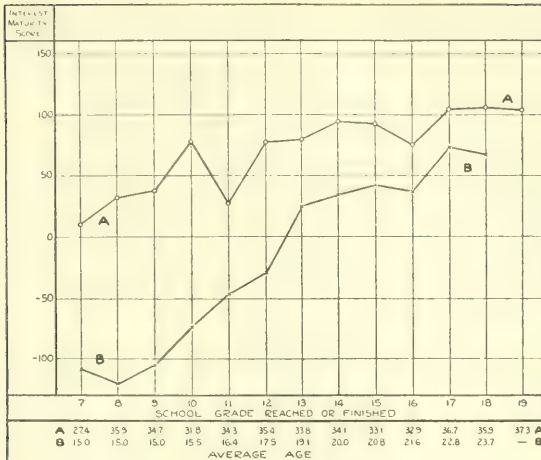


FIG. 2. AVERAGE INTEREST MATURITY SCORE ACCORDING TO SCHOOL GRADE REACHED OR FINISHED OF (A) MALES WHO HAVE FINISHED SCHOOL AND (B) MALES STILL IN SCHOOL

TABLE 6
Interest maturity scores grouped according to age

AGE	STILL ATTENDING SCHOOL				NO LONGER IN SCHOOL			
	Number	Average grade	I.M. score	S.D.	Number	Average grade	I.M. score	S.D.
15	298	9.3	-90.0	74.6				
16	152	10.8	-53.0	71.8				
17	250	11.9	-23.4	72.4				
18	343	12.3	-19.0	74.8				
19	229	13.4	24.2	61.4				
20	186	14.4	29.4	61.8				
21	168	15.1	37.2	57.8				
22	151	15.3	38.4	57.8				
23	93	15.3	50.0	59.8	38	11.0	-3.2	84.3
24	43	16.0	52.8	57.8				
25	25	16.4	58.8	58.6	250	15.0	56.2	61.8
28-32					241	14.8	65.5	57.6
33-37					121	15.1	99.4	64.4
38-42					13	13.5	102.3	77.0
43-47					91	15.4	120.3	53.8
53-57					83	15.1	133.1	64.4
63-67					41	15.1	115.4	50.0
Total....	1938				878			

are subdivided according to age and school grade, respectively. The data in table 7 are also given in figure 2.

The 881 males no longer in school have spent on the average about three years in college (14.8 grade) at each age level from 25 to 55 years. The gain in interest maturity from 56 to 133 is therefore attributable to the age change from 25 to 55 years. This is a greater change than recorded for this age range in figure 1. Similarly,

graduate work are both responsible for increase in interest maturity score. But the former affects interest maturity almost twice as much as the latter.

This situation is shown still more clearly by the data in table 8 which includes 578 of the 869 cases in table 7. Here, with schooling held constant, those aged 55 years score 91 points higher than the 25 year olds, whereas when age is held constant,

TABLE 7

Interest maturity scores grouped according to school grade

SCHOOL GRADE	STILL ATTENDING SCHOOL				NO LONGER IN SCHOOL			
	Number	Average age	I M score	S D	Number	Average age	I M score	S. D.
Grammar 7	21	15 0	-109.2	49.9	12	27.4	10 0	85.6
Grammar 8	50	15 0	-120.4	69.4	56	35.9	31.8	89.6
High School 9	90	15 0	-104.6	62.8	17	34.7	38.2	51.0
High School 10	165	15.5	-73.4	76.6	35	31.8	52.9	56.2
High School 11	170	16.4	-45.3	53.2	20	34.3	29.0	90.8
High School 12	450	17.5	-29.8	70.6	94	35.4	77.9	70.4
College 13	271	19.1	26.2	60.6	23	33.8	80.4	58.6
College 14	302	20.0	33.6	60.8	44	34.1	94.1	54.2
College 15	54	20.8	41.5	72.4	19	33.1	92.1	44.4
College 16	307	21.6	36.8	56.2	257	32.9	75.9	58.8
Graduate 17	41	22.8	72.9	49.6	101	36.7	104.5	68.2
Graduate 18	14	23.7	67.1	54.4	58	35.9	105.5	57.4
Graduate 19					133	37.3	103.1	59.4
Total.....	1935				869			

these 881 males average 35 years of age at each school grade level from the 8th grade up to third year of graduate work. Here again there is noticeable increase in interest maturity—a gain from 31.8 at the 8th grade to 103.1 at the upper educational level. But this gain is only equivalent to the gain from 23 years up to 39 years. Evidently chronological age from 25 to 55 years of age and schooling from 8th grade to third year of

those in the third year of graduate work score only 6 points higher than those in the 12th grade.

On the other hand, it would appear from a comparison of the data regarding those still in school (tables 6 and 7) that schooling has a greater effect than chronological age upon interest maturity scores, for there is a difference in score of 176 (—109 to 67) between 7th grade and second year of graduate work and only a difference of 149

(-90 to 59) between 15 and 25 years of age. A somewhat greater difference in favor of the effect of schooling over that of chronological age upon interest schooling is equivalent to a year in interest maturity whereas an advance of one year in age is equivalent to only 2/3 a year in interest maturity.

TABLE 8

Distribution of interest maturity scores of men who have finished school

AGE	SCHOOL GRADE REACHED OR FINISHED				AVERAGE OF 12, 16, 17 AND 19 ¹
	8	12	16	17	
23	-84	35			
25	28	32	62	67	56
30	56	70	58	76	74
35		119 ²	112	89	108
45		118	118	147	126
55		154	130	162	147
Average of 25, 35, 45, 55 ¹		99	96	108	105
				105	102

¹ Sub-groups weighted equally.

² Only 7 cases. In all other cases, at least 10 cases are involved. Total number of cases included in table is 578.

TABLE 9

Distribution of interest maturity scores of men now in school¹

AGE	GRADE REACHED OR FINISHED										
	7	8	9	10	11	12	13	14	15	16	17
15	-109	-120	-104	-76	-95						
16				-73	-52	-21					
17					-41	-28	20				
18					-22	-38	-71	30			
19						-12	22	37		40	
20							-7	29		44	
21							53	15	56	37	
22							50	38		22	
23							38	71		37	61
24										47	54
25										17	

¹ Based on a total of 1813 cases. Each average given is based on at least 10 cases.

maturity is presented in the more detailed distribution of scores in table 9. When these scores are expressed in terms of years based upon the smoothed curve in figure 1, it appears that an advance of one grade in

A more detailed analysis as to the effect of both age and schooling is reserved for a later date when a larger amount of data will be at hand. Evidently, schooling from the 7th to 12th grades affects our interest

maturity scores somewhat more than chronological age between 15 and 25 years, whereas schooling above the high school level affects such scores somewhat less than chronological age between 25 and 55 years.

Relation of Interest Maturity to other Factors

What significance interest maturity scores have in the lives of young men still remains to be determined. The very great individual differences at each age level challenge one for an interpretation. And the fact is noteworthy, that when group differences are considered, those in terms of interest maturity are as large as differences obtained by other test procedures. An example of this is found in the data secured from 62 men who spent a night at the Palo Alto Shelter this winter. Their ages range from 17 to 62 years with an average of 29 years; their average percentile in interest maturity is 29; in dominance, 41; in self-sufficiency, 51; in introversion, 60; and in neurotic tendency, 64.¹⁰ The younger men (i.e., between 17 and 24 years of age) appear to be typical in these five measures except that of interest maturity where the percentile is only 36. The older men (i.e., between 30 and 59) deviate from the norms in all five measures, to a greater degree than does the whole group of 62, except for self-sufficiency where there is no difference.

¹⁰ The four personality traits were measured with the Bernreuter Personality Inventory. The whole study will be published shortly by B. F. Culver.

SUMMARY

1. Interest maturity has reference to the degree to which one has the interests of 55 year old men of superior education and occupational attainment in contrast to the interests of the typical 15 year old boy.

2. Interest maturity may be measured with the Vocational Interest Blank and an appropriate scale, similar to those used for the determination of occupational interests. Reliability of the scale is about .95.

3. Interest maturity correlates .74 with age when the age range of 15 to 55 years is included. It correlates only .47 over the age range of 15 to 20 years.

4. Interest maturity correlates about .10 with scholarship and age and -.06 with intelligence in the case of Stanford University seniors.

5. Apparently the 15 year old boy has to a large degree the fundamental interests characteristic of most occupations except those related to ministers, school men, city school superintendents, Y. M. C. A. secretaries, personnel managers and to a lesser degree psychologists, certified public accountants, journalists and lawyers.¹¹

6. Interest maturity is necessarily to a large degree a measure of the extent to which one has the interests of the occupations listed above, since it is these interests which are largely absent at 15 years of age and arise during the following decade.¹¹

¹¹ Conclusions 5 and 6 are based on data to be given in the article entitled, "Classification of Occupations on Basis of Interests," to be published in a forthcoming issue of the *Personnel Journal*.

Classification of Office Positions In the University of Chicago

By FORREST A. KINGSBURY, *The University of Chicago*

When wage and salary standards are under close scrutiny as at present, personnel departments not overburdened with hiring may well seize the opportunity to evaluate anew the bases on which salary differentials are fixed.

Office positions in The University of Chicago involving about 500 employees were graded and classified in 1932 with a view to establishing equitable salary standards for each grade of work. Position descriptions, supplied by employees and supplemented and validated by supervisors and department heads, were rated on each of seven common characteristics, three referring primarily to the duties and responsibilities, and four to the minimum qualifications considered essential for the position under consideration. Each position was classified in accordance with its total rating, and the provisional classification reviewed, corrected, and agreed upon in conference with the department head concerned. The reliability of this rating procedure is indicated by the correlation of $+.96$ between combined ratings on the three work factors and on the four qualification factors. Definitions of factors and factor-grades are presented in full.

DURING the winter and spring of 1932, at the request of President Robert M. Hutchins, a classification of the office positions in the University of Chicago was made by Miss Joyce Harris, Director of Employment for office positions, and the writer. Positions held by about 500 employees, up to and including the level of office management, were thus classified, with a view to establishing equitable salary standards for each grade of work. In view of the wide variety of duties performed, the absence of large work-groups having similar duties, the unstandardized character of the job-titles in use, and the decentralized type of organization

and control existing, it seemed advisable to employ an analytical approach, a modification of the job-grading procedure previously described by the writer.¹

The following brief account is adapted from the mimeographed explanation prepared for the information of department heads, in connection with their conferences with the

¹ F. A. Kingsbury, *Grading the Office Job*, Administration, 1923, V, 267-275, 393-401, 537-548, 669-680; *Management & Administration*, 1923, I, 73-78. Also, F. A. Kingsbury, *Job Grading in a Large Bank*, (In) *Salary Administration*; Report by the Committee on Salary Standardization, New York: Amer. Management Ass'n, 1925, 46-49.

analysts, at which the gradings of positions in the department concerned were reviewed, corrected, and agreed upon. Nothing is here said about the administrative procedure of putting the classification into effect, nor about the details of the technique of setting salary standards. The grading and classification procedure is the problem here considered.

PRINCIPLES UNDERLYING SALARY STANDARDIZATION

This classification is based upon the assumption that office salaries are determined by four conditions:

1. The nature, importance and difficulty of the position.
2. The relative competency of the individual employee.
3. General economic conditions and local wage policies.
4. A variety of special distorting factors, some of which are at work in almost every office and which result in some employees being paid more, and others less, than the three first-named "normal" conditions would decree.

The particular objective sought in this classification was not to evaluate individual employee competency (condition no. 2), nor to decide whether the present general salary level is higher or lower than it should be (condition no. 3). The aim was merely to determine what range of salary is fair and equitable for each office position, in terms of its importance and difficulty and in terms of present University salaries, regardless of the individuality of the present incumbent; that is, this study endeavored to correct the influence of condition no. 4.

Salary standardization programs,

such as are being carried out in an increasing number of large organizations including banks, civil service, public utility and insurance companies, are in agreement upon certain basic principles, among them the following:

1. For each type of position, there should be established a minimum salary and a maximum salary.
2. Employees hired or transferred into a certain position should ordinarily start at the minimum.
3. The particular salary any employee should receive within the established range should depend upon his relative competency, determined by systematic merit-ratings, and not upon mere length of service.
4. An employee who reaches the maximum salary for his position, should receive no further salary increase, except through being transferred to some higher grade position for which he is qualified, and which provides a higher salary maximum in return for the more valuable grade of service it demands.
5. A position which acquires added responsibilities and importance because of the exceptional competency of the person holding it, should be reclassified at a higher level, retitled, and appropriate higher salary standards set.

GRADING AND CLASSIFYING POSITIONS

This classification of office positions was based upon position-description data furnished by employees, supplemented and validated by their supervisors and department heads. Each job-description was carefully read and rated by two analysts, and classified in one of the fourteen classes provided. The particular class in which any position falls was determined by the rating of that position with respect to each

of seven factors, which, in varying degree, characterize all office positions. These seven factors are:

A. Work Factors

1. Grade of duties (their nature, repetitiveness, number and variety, simplicity or complexity, independence of performance, judgmental responsibilities, ease of mastery, difficulty of replacement of employee, etc.; grades 1 to 7);
2. Supervisory responsibilities (for planning and directing work of others; grades 0 to 4 or more);
3. Responsibility for public contacts (including also inter-departmental and inter-divisional contacts, affording possible occasions for friction, as well as for furthering or injuring public good-will toward University, division, or department; grades 0 to 3);

B. Qualification Factors

4. Minimum age at which employees are ordinarily accepted (reflecting their degree of education, special training, experience, and general maturity; grades 1 to 7 or more);
5. Minimum general education considered necessary (grades 0 to 4);
6. Minimum specialized training considered necessary (grades 0 to 2);
7. Minimum experience considered necessary (grades 0 to 5 or more).

Each position was rated separately on each of these seven factors, in accordance with the definitions of the various grades, hereinafter quoted. The sum of the seven factor-ratings (termed the "grade-index") determined the grade-class in which the position was placed. Thus, a grade-index of 2 or 3 indicated Class I; of 4 or 5, Class II, and so on for the fourteen classes.

It will be noted that the two groups of factors afford two distinct, yet perfectly consistent, evaluations of any

position. It would be perfectly feasible to simplify the task by rating on either Group A (Work Factors) alone, or Group B (Qualification Factors) alone, making corresponding adjustments in the grade-index values of each class. Indeed, one could go further, and subdivide the Group B factors into two sub-groups, (a) age alone, and (b) the other three factors combined, using one to check the other; or one could eliminate the age factor entirely, if it were felt to be too unreliable. In

TABLE 1

TOTAL, GROUP A WORK FACTORS	(ORDINARILY CALCULATED)	TOTAL, GROUP B QUALIFICATION FACTORS
1		2
2		3, 4
3		4, 5, 6
4		6, 7, 8
5		7, 8, 9
6		9, 10, 11
7		10, 11, 12
8		11, 12, 13, 14
9		12, 13, 14, 15
10		13, 14, 15, 16
11		15, 16, 17, 18
12		16, 17, 18, 19

this classification, the entire seven were used, in the belief that greater reliability in the gradings would ensue.

A number of checks on the reliability of the grading were applied, one of the most significant being the correlation between the gradings on the combined Work Factors and the gradings on the combined Qualification Factors, which correlation, theoretically, should approach +1.00. Actually, this correlation approximated +.96, which seems to demonstrate not only that most position-descriptions can be evaluated

quite reliably, but that the several factors have been properly weighted.

Table 1 shows the sub-totals of the two groups which were found most commonly to correspond.

SETTING MAXIMUM AND MINIMUM SALARY STANDARDS

The salary ranges proposed for each class of position were not intended to be understood as "ideal salaries," but simply as the minimum and maximum salaries which each class of position would pay if present salaries were equitably redistributed on the basis described. No recommendation was made in this classification looking toward any increase or decrease of the total salary budget. Nor was any attempt made to say what salary within the proposed salary range should be paid to any individual employee, for to do so would necessitate obtaining further information, by service-ratings or otherwise, about the competency of each individual employee. The effort was constantly made to disregard the personalities of present incumbents, and to evaluate each position as if it were not now filled. Minimum and maximum standards were set with due regard to (a) present salary practices with respect to entering or transferred employees in each class of position; (b) the relation between maximum in each class and the minimum of those higher classes to which employees might be promoted from the lower class; and (c) equating the total of "overpaid" salaries with that of the "underpaid" salaries, in order to be consistent with existing general salary criteria.

In any undertaking of this kind, to

correct present salaries which are either too high or too low for the standards set is never an easy task, for it involves evaluating the individual employee as well as his position, and determining which of several possible courses of action is most equitable. Cases of maladjustment fall into three general classes, namely:

1. Where salaries are above the maximum set for their class, in which case the following questions should be considered:
 - a. Whether the employee can properly be transferred to a higher-grade position at equitable salary;
 - b. Whether his present position can be increased in responsibility and value and reclassified high enough to justify the present salary;
 - c. Whether the present classification is unfairly low, and if so, in what detail;
 - d. Whether the salary should be reduced.
2. Where salaries are below the minimum for their class, (calling for the converse of the above considerations).
3. Where salaries fall within the established range. Even though they conform, apparently, to the norm, further scrutiny may reveal the need of corrections of one or another of several kinds, for example:
 - a. Beginners or mediocre employees should not receive much above the minimum for their grade while superior employees may;
 - b. An employee apparently properly paid may really be unqualified for this grade of position, and thus overpaid;
 - c. Such an employee may be qualified for a much better position, and thus underpaid;
 - d. His position may have been over- or under-described, and consequently over- or under-evaluated, which, if corrected, would place him in an overpaid or underpaid class.

The following paragraph, quoted from the analysts' report, indicates the reception afforded the undertaking:

"The analysts wish to express sincere appreciation of the fine spirit of cooperation exhibited by Divisional and Department Heads, as well as employees. Almost without exception, Deans and Department Heads expressed their enthusiastic approval of the plan, their conviction of the long-standing need of such a classification, and their willingness to give full and cordial assistance. In 95 per cent of the cases, employees have apparently been eager to give complete and accurate information regarding their jobs."

DEFINITIONS OF FACTOR-GRADES USED IN RATING POSITIONS

GROUP A - WORK FACTORS

1. *Grade of Duties*

Grade

1. (Repetitive) Duties few, simple and uniform, usually repetitive, quickly learned, and covered by definite rules or practices; work done under constant check and direct supervision. Examples: File clerks (simple alphabetical or numerical filing); office boys; errand boys; messengers.
 2. (Routine) Duties more numerous, but routine and at most semi-skilled in nature; covered by rules; require a few days to a few weeks for mastery by inexperienced person; work usually under constant check and direction. Examples: Junior clerks (billing, tube and telephone, store-room, mail, etc.); junior sales clerks; junior cashiers (handling small amounts); typists, stencil-cutters, apprentice stenographers; switch-board operators; reception clerks.
 3. (Higher Routine) Duties *either* numerous and varied but fairly simple or else limited in number but somewhat complex, covered by rules or practices, but possibly with some variation in their application; usually requires some experience or special training; work usually under direc-
- tion. Examples: Record clerks; sales clerks, having limited buying responsibilities; stenographers (ordinary dictation and transcription); bookkeepers' assistants.
 4. (Limited Judgment) Duties varied, somewhat complex, and requiring previous experience and special training, and preferably acquaintance with University office practices and personnel; some responsibility for interpreting and applying rules; work usually under indirect check and general direction. Examples: Senior clerks (collection, time-keeping, cost, correspondence etc.); stenographer-correspondents; supervisors of filing, mimeographing, etc.; bookkeepers (analyzing and distributing charges, posting and balancing, preparing income, expense and cost reports, etc.).
 5. (Middle-grade Judgment) Duties more varied, complex and responsible than grade 4, requiring exercise of some independent judgment and a higher degree of specialized skill and/or knowledge obtainable only through special experience or training; works under general direction with little check. Examples: Secretaries and assistants (assuming some of judgmental responsibilities which would otherwise fall on administrative or instructional officers); correspondents; office supervisors or chief clerks (smaller offices); assistant supervisors (larger offices); senior bookkeepers.
 6. (Judgment) Duties varied, numerous and complex, requiring extended training and experience, and intensive knowledge of a specialized field; constant responsibility for exercise of judgment on difficult cases, and for important problems and adjustments not covered by rules.
 7. (Higher Judgment) Duties highly varied, complex, and numerous, with heavier responsibility for initiating action and making decisions, limited only by general University or divisional policies; requires unusual

degree or kind of specialized training and experience.

2. Supervisory Responsibility

Grade

0. No supervisory responsibility involved.

1. Distributes routine work to work-group and checks performance, or assigns routine duties to office boys, messengers, or assistant; decides routine questions for employees; under direct supervision.

2. Supervises small (not over $\frac{1}{2}$ dozen) office or section of large office, having limited variety of duties, or assists manager of large office; instructs and oversees new employees; limited disciplinary authority; plans work for group, and makes decisions somewhat beyond routine level; some responsibility for choice of methods.

3. Immediate responsibility for management of larger office having wider variety of duties; interviews applicants, and partially responsible for hiring, transferring or discharging; keeps records of employees; may have full disciplinary authority; responsible for office methods and practices, limited by University or office policy, and under general direction of an administrative officer or assistant officer.

4. Responsible for large office or group of related offices, under direction only of officer of administration or divisional dean; responsibility for methods, policies and practices limited only by University or divisional policy; supervises employees through assistants.

5. Officers and assistant }
6. } officers of administration } (Not used in
7. } tion. } this study)

3. Public Contacts

Grade

0. No public contacts.

1. Receiving or transmitting simple messages in person or by telephone; answering routine questions; acceptable appearance, manner and voice recognized as potentially important

though not constantly or crucially so. Examples: Answering telephone, errands to officers or faculty, contacts with other offices, noon hour substitutes.

2. Frequent contacts with public (i.e., faculty, officers, students, or prospective students, patients, customers or applicants for employment); responsibility for describing or explaining procedures, making simple adjustments, and for exhibiting such courtesy, tact, and manners as shall create or maintain favorable impression of the University personnel.

3. Contacts often of such confidential or crucial character,—persuading, correcting, placating people,—as to make superior tact, courtesy and judgment major qualifications.

GROUP B—QUALIFICATION FACTORS

4. Minimum Age

Grade

1. 16 or 17

2. 18 or 19

3. 20 or 21

4. 22, 23, or 24

5. 25 or 26

6. 27, 28, or 29

7. 30 or 31

8. 32, 33, or 34 }
9. 35 or above } (Not used in this study)

5. Minimum General Education

Grade

0. Less than high school completed.

1. High school completed.

2. One or two years college or university.

3. College or university completed.

4. Graduate or professional training.

6. Minimum Special Training Courses

Grade

1. Typing, comptometer, multigraph, etc.; (ordinarily, a few weeks' or months' training).

2. Stenography, bookkeeping, journalism, elementary accounting; (ordinarily, several months' or a year's training).

7. *Experience*

Grade

0. No practical business or office experience required.
1. Some business or office experience, or equivalent in training in actual business *practice* (not theory) in school; ordinarily a few weeks or months.
2. One or more years' office or business experience, more varied or intensive than that of the usual beginner's job, and presupposing development either of (a) some specialized skill, technical vocabulary or technical knowledge, or (b) working familiarity with wide variety of office or technical practices, or of University policies and practices well beyond apprentice grade.
3. Office or business experience (usually

more than two years); presupposing knowledge and skill equal to level 2, and also either (a) superior specialized knowledge and skill up to "expert" level, or (b) responsibility for some independent judgment and initiative, or (c) intensive acquaintance with personalities or affairs of officers or important friends of the University; obtainable only by extended contacts.

4. Several years' experience to and beyond level 3, and in addition some minor executive experience, or attainment of "expert adviser" status.
5. Several years' experience in responsible executive or consulting positions.
- 6) Ditto—higher grade. (Not used in
- 7) this study.)

Manuscript received January 30, 1933

Analysis of Employment Interviews

By RICHARD S. UHRBROCK, *The Procter & Gamble Company, Ivorydale, Ohio*

Interviewing is a fine art. Nevertheless, as Dr. Uhrbrock shows, it can be studied in a scientific spirit, with practical benefit.

Seven employment interviews were attended by twenty observers who rated the seven applicants on a graphic scale and ranked the interviewers in order of merit. The interviews were also analyzed from verbatim records, and rated by five employment experts. Applicants did from one-quarter to one-half of the talking. The applicant who did the least talking was hired. It is suggested that interviewers could be trained by means of intelligent criticism of stenotyped records of their conversations with a selected group of applicants.

THE seven employment interviews which have been analyzed were conducted before a class in Applied Psychology in the Evening College of Engineering and Commerce at the University of Cincinnati. The applicants were seniors who were unknown to the interviewers. Four of the seven interviewers were experienced personnel men. The remaining three were department heads who held responsible positions in industrial organizations. A complete stenotyped record was made of each interview.

Table 1 shows (a) Ranking of unedited reports by five employment experts, (b) Average ranking of applicants by twenty observers, (c) Average ranking of interviewers by twenty observers, (d) Number of words spoken by applicants and interviewers, (e) Percentage of total words spoken by applicants and interviewers.

Each interview was approximately

twelve minutes in length. The number of words spoken by applicants ranged from 159 to 651. The interviewers spoke from 437 to 723 words. Applicants did one-quarter to one-half of the talking, while interviewers did from one-half to three-quarters of the talking. The observers tended to rate the applicants in the order of their fluency. The one marked exception to this general tendency, Bal., who talked the least, actually was hired by Interviewer McL. at the conclusion of the experiment. McL. was employment supervisor in a large Cincinnati company. These two men did not constitute an interviewing unit. If any conclusion is justified on the basis of these conflicting results it is that vocational counselors should be wary about advising young men to talk much or little when they apply for jobs!

In the demonstration conducted by the best interviewer (McL. and Par.)

the interviewer did 48 per cent of the talking. When we consider the demonstration in which the interviewer was rated poorest, (Bor. and Kec.) we note that 66 per cent of the talking was done by the interviewer. We cannot generalize from these observations and state that the ideal interview is one in which the interviewer talks only half of the time, and that the poor interviewer talks two-thirds of the time. We note that Tho., who was rated second in the list of seven interviewers, also did two-thirds of

establishing rapport with the applicant, and in maintaining the entire interview upon a friendly, but business-like plane. Data of this type support the belief that interviewing is an art, and that the interviewer and the applicant constitute a dynamic unit that must be viewed as a whole.

The five employment experts who read and ranked the unedited reports disagreed markedly among themselves as to the quality of the interviews. It may be that employment men have no common standards for judging an

TABLE 1
Analysis of seven employment interviews

INTERVIEW	RANKING OF INTERVIEW BY 5 EMPLOYMENT EXPERTS	APPLICANT	RANKING OF APPLICANTS BY 20 OBSERVERS	INTERVIEWER	RANKING OF INTERVIEWERS BY 20 OBSERVERS	WORDS SPOKEN				
						Applicant	Per cent of total	Interviewer	Per cent of total	Total
I	4	Kib.	7	Tho.	2	251	34.43	478	65.57	729
II	1	Par.	1	McL.	1	651	52.16	597	47.84	1248
III	3	Whi.	2	Mau.	4	545	52.81	487	47.19	1032
IV	7	Bal.	4	Vot.	5	159	26.68	437	73.32	596
V	5	Gro.	3	Har.	6	462	43.30	605	56.70	1067
VI	2	Rai.	6	Skö.	3	398	36.51	692	63.49	1090
VII	6	Kec.	5	Bor.	7	380	34.45	723	65.55	1103

the talking. The manner of the interviewers, Bor. and Tho., had a pronounced effect upon the observers. Bor. assumed the hard-boiled attitude of the traditional executive who denies that he has a vacancy but who probably would find a place for a man who could "sell" himself and break through the defense barriers and resistance that are set up. He intentionally assumed that rôle, even though he knew the weak points in it. Tho., on the other hand, is an older man of wide educational and industrial experience, who was exceptionally adroit in

interview when it is stripped of its setting and reduced solely to what was said. The employment experts tended to rank the typed reports in the same order that the interviewers were ranked by the twenty observers.

The unedited report of the second interview (McL. and Par.) is presented. McL. was rated as the best of the interviewers, and Par. was rated as the best of the applicants by the twenty observers. The five employment experts, who reacted solely to the typed reports, rated this interview as the best of the seven.

STENOTYPED REPORT OF EMPLOYMENT
INTERVIEW

Interviewer: What class are you in?

Applicant: I graduate this June. I finished at the end of April, but will not graduate until June.

Interviewer: You are applying for a position at — as a student manager. I presume you are fairly well interested?

Applicant: I'd like a job like that very much. I'd like to work for —.

Interviewer: What is your working experience?

Applicant: I have worked after school hours since I was a boy. My first job was as a grocery boy. Mostly concerned with work in a packing house. Mostly along mechanical lines and along the processing departments, though I have worked in four different departments. I have been employed by — & Company and after I came to Cincinnati I have co-oped with the — Company, which is purely a pork house; but I have had experience with feed products at — & Company. While at — I started in as a helper in the warehouse department and gradually I took over plant engineering. When there would be little work for me in that line, I got Mr. — to let me work in the processing department. I got through the killing and cutting and smoking and curing departments. I am thoroughly familiar with meats. I won't say I have had so much experience with the staple articles but I believe with the background and training in food products I have had, I would be able to pick that up a little faster than some one who did not have that training.

Interviewer: Would you be interested in store work or in the meat line? Your experience has been in the packing houses.

Applicant: I prefer packing houses. I like that sort of work. I'd be willing to take a position in your organization if it led to a more responsible work than as a grocery manager. I think it has just so happened that my training has been in packing houses. Because of my training with — & Company, that was the co-op job I was placed in when I first came to the university. Then the depression came on and I made the

best of it. I tried to learn all I could in that particular line. I really can't say I would want to follow that kind of work to the exclusion of anything else.

Interviewer: Do you think that — offers you enough opportunity for advancement?

Applicant: I have made a few inquiries. The company is much larger than the company now employing me. I would naturally assume that the opportunities were that much greater.

Interviewer: Are you willing to go through a rather long period of training at a low salary?

Applicant: I'd be willing to do that if, of course, I could live on the salary paid. I have spent now about five years at the university and if I had to discard all that and start another training course—

Interviewer: I mean training that would pertain directly to the grocery business. You would be well qualified to manage a store. That training will last three or four months before you would be capable of taking over a store.

Applicant: That would appeal to me. As far as three or four years is concerned—

Interviewer: It is not easy work. To begin with the store work is hard. There are long hours connected with it. Ten hours every day and thirteen or fourteen on Saturday. There is often overtime and in this work you get any number of hard jobs. You may be washing windows or sweeping floors or scrubbing counters, cleaning the rear room or the basement, or unloading trucks. Some of the sacks and loads are heavy, weighing over 150 pounds. I wonder if you would stick it out?

Applicant: You are familiar with the operations around a packing house. For six weeks I worked on the killing floor. I started driving hogs and from there went to the sticking pen, which is probably the dirtiest job there is, and I handled the products from the inedible parts.

Interviewer: Any one that went through that will be qualified to stick out the grocery business.

Applicant: As far as long hours are concerned, I worked, as I said, as a boy in a grocery store. I went to work at 6 o'clock.

Interviewer: There is opportunity with

our company. We do promote from the ranks. We get all our supervisors and superintendents from the grocery store managers. Such promotion would not come over night or in a year or so. You may have to work as a student manager for several months and as a manager of a store for several years. We are laying a foundation during the depression and we are looking for college graduates, men with educational background on whom we can build, more so than in the past. In the past our store managers were selected by supervisors and there was no real selection made. If there was a need for a man, the first man they met on the street would get the job. Now we do try to get more capable men. As far as the salary is concerned, we start the men out at \$20.00 a week and that lasts through the training period. At the end of two weeks we have a good check up on the man and we determine at that time whether you are going to remain in the grocery business and be satisfied with it. If you are dissatisfied, you lay your cards on the table and tell us whether you want to continue. If we are not satisfied with your work, we lay our cards on the table and ask for your resignation.

After you complete your training work and are qualified to manage a store, we select our managers from fifty students. We endeavor to place the men in neighborhoods suitable for them. I would not want to place you in the West End of Cincinnati. I would want to place you in a better neighborhood. You would not want to work in that section where there are many negroes. Their dollars are as good as any one else, but there are certain men for certain neighborhoods. After you finish the training and are promoted to a business manager, your salary would average \$35.00 to \$38.00. Would you be satisfied to continue with that for at least three years?

Applicant: Yes, I think so because, well, I don't know how to express it, but I'm looking for a job with the — — and — — Company and the opportunities for advancement are there in an organization of that size and I'd be willing to take a chance on being advanced out of a \$35.00 a week job

as I developed in the organization. I'd be willing to take the same chance on that job as you'd be taking with me.

Interviewer: We require a physical examination.

Applicant: My health has always been good.

Interviewer: What courses have you taken?

Applicant: Mechanical engineering courses. I took mechanical engineering because I thought I did not know exactly the line of work I would be thrown in and that is probably as general a course as you can take, in this school. You get some business and some chemistry, electricity and mechanics. I'd be glad to send you a complete outline of all the experience I have had during my co-operative work and previous to that.

Interviewer: I would be interested in getting that and also be interested in having you examined by our company physician. Drop in again.

The seven interviews which have been analyzed reveal the difficulties of the majority of interviewers in establishing rapport with the applicants; the groping for promising cues, leads and openings; and the lack of "terminal facilities" when the time came to close the interview. A more careful phrasing of questions undoubtedly would have forced applicants to supply more facts upon which judgments of fitness could have been based. At present we attempt to improve interviewing technique by assigning selected readings, and by discussing the problem and methods. It is probable that an individual interviewer's skill could be improved materially by intelligent criticism of twenty or thirty verbatim records of his conversations with applicants.

Manuscript received October 1, 1932

One Thing at a Time

A Safety Program That Worked

By JOHN N. DICK, *New York*

Mr. Dick's eminently practical description of a planned safety program is of special interest at this time to managers who want to forestall the excessive costs of rapidly rising accident rates, such as have usually accompanied the rehiring of laid-off employees.

UNFORTUNATELY the "shot-gun variety" of safety program is still predominant in most industrial organizations. The various ingredients of safety education have ordinarily—to change the metaphor—been given to workers in mixed doses in the hope that some of them would take, and produce sufficient immunity to accidents. They have not always taken. Swallowing the whole subject of safety in a single dose has been too much for the patient; he has become only partially immune. He has grown used to the steady ballyhoo about general safety. It no longer sinks in.

At one of the larger eastern manufacturing plants a program of *specific* safety education was initiated. A program which emphasized just one phase of safety at a time replaced the old general safety program. The result was a remarkable reduction in accidents.

Safety work had been in progress at the plant for some time. Posters of the National Safety Council had been used on the bulletin boards, posters of a general nature stressing the desir-

ability of working safely. A safety engineer investigated cases, located hazards, and recommended corrections of dangerous conditions.

Many a heavy accident cost has resulted from neglect at the time of injury. In this plant the victim of an accident was rushed to the hospital and given the best of medical attention. No money was spared to prevent permanent disability or death. This was good business for the Company, but it also created a feeling of gratefulness on the part of the injured man and his family, and minimized the possibility of traumatic neurosis. Humanitarianism and the interests of the Company went hand in hand.

The accident was investigated. It usually proved to be directly due to human negligence. In order to save time, the man had decided to clean his machine while it was in operation. His arm had been caught between two rolls; a set screw on a shaft had caught his jumper and pulled his arm in a different direction; result, another arm for the scrap heap.

But that seldom was the whole story. It was necessary to look far-

ther for the real cause of the accident. Whose was the initial responsibility? The man's foreman had undoubtedly instructed him never to clean a moving machine. The man had disobeyed orders and shown poor personal judgment as well. But it was discovered that the safety engineer had recommended that a guard be put at this place. This would have prevented the man from cleaning the machine until it had been stopped. The guard had never been installed.

The problem took on a different complexion. There had been a program of safety education; here was an excellent example of its ineffectiveness. Neglect on the part of the Company's own representatives was responsible for the accident. The need for something different in an accident prevention program was obvious and imperative.

Previous efforts in this direction were mostly of a general nature, the usual ballyhoo for safety. Their failure pointed the way to the remedy. Why not try a specific program, specializing, one at a time, on each of the various phases of safety, something with sufficient emphasis to impress not only the laborers but the foremen and supervisors and superintendents? Attempts to educate them in the entire subject had proved futile. But if one idea at a time could be got across to them, after a while they would know something about safety.

To launch such a program successfully involved three things: (1) the presentation of each safety idea in such a way that each person in the organization could easily understand it and digest it; (2) the full coöperation of

the management (the body through which safety ideas must be sold to superintendent, supervisors, foremen, and finally to the workers); (3) some test by which the success of the program could be judged.

The campaign contemplated presenting one idea at a time with such force that every man, whether supervisor or laborer, would be impressed.

All accidents occurring at the plant during the preceding year were analyzed for the cause. These causes were then grouped in the order of their seriousness, taking into consideration both frequency and severity. This yielded the following list: foot injuries, handling materials, falls, harmful substances, eye injuries, and machinery. All available information on these subjects was collected from the following sources: safety committees, National Safety Council, safety equipment companies, state labor department, safety magazines and handbooks, our own inspection reports and records of accidents.

Then the program was constructed. A month or more was scheduled for each of the safety subjects listed. Each week a poster stressing some specific phase of the subject was placed on the bulletin boards. Most of these were prepared at the plant, photostatic copies being used for posting. Being local and personal, they proved more effective than stock safety posters. They were simple in design and carried very little lettering. Those employees who did not read English could understand them. Below each poster three or four pertinent safety hints were listed.

Just before a new poster was to be

hung, a letter was sent to each foreman acquainting him with the nature of the poster for the week and with facts, causes and costs relative to the specific accident subject. An illustrated article on the current safety topic appeared each month in the plant magazine. Pertinent leaflets, as well as safety magazines, were distributed to all foremen and safety committeemen. Special talks were developed for safety committee meetings. Displays made from local materials were arranged in various parts of the plant: at one time an array of unsafe tools, sprung wrenches, cracked handles, etc. that had been picked up in the machine shop; at another, a display of types of goggles and their proper uses. All employees were invited to see safety motion pictures.

Each program was carried out with this one thought in mind: to concentrate on one single subject at a time, so that eventually the workers would absorb a number of specific ideas about the particular subject stressed.

When an accident did occur the matter was laid before the superintendent of the division after investigation by the safety engineer. The division superintendent was led to feel that he was responsible for this accident. He, in turn, took it up with the supervisor of the department in which it occurred. The supervisor saw the foreman about it, and finally the foreman discussed the various angles of the case with the injured man himself, explaining what had caused the acci-

dent and how it could have been avoided. This plan of placing the responsibility from the head of the division on down the line impressed the executives of the Company, as well as the laborers themselves, with the great importance of accidents. It created a safety consciousness.

The success of the new program was evident from the start. "Foot Injuries" was chosen as the initial subject of the campaign. In order that a check-up might be made of the effectiveness of the appeal, it was assumed that if the workers were genuinely impressed, they would purchase safety shoes. More safety shoes were sold at the plant during the month devoted to "Foot Injuries" than had been sold during the entire previous year! Even after the campaign had finished with "Foot Injuries" and gone on to the next subject, the monthly sales of safety shoes remained above the total for the previous year.

The effectiveness of the new campaign has also been measured by the reduction in number of accidents. Since it has been in progress, accidents due to the causes stressed have been reduced sixty per cent. The cost of such accidents has been reduced seventy per cent. Other factors may have assisted in the reduction, but it would be a conservative estimate to attribute at least fifty per cent of the reduction to the specialized safety campaigns.

Manuscript received November 4, 1932

Student Personnel Services in Teachers Colleges

BY M. ERNEST TOWNSEND, *New Jersey State Normal School*

How should teachers colleges select their students? How are such students selected? What are good advisement procedures? What do teachers colleges need to know about the student as a person? In pondering these and related questions, what President Townsend has ascertained regarding the adequacy of present practices of teachers colleges in the administration of student personnel services will be of value to teachers, college administrators, registrars, deans, placement officers, and research directors.

This article presents the results of an investigation in answer to two major questions: What personnel practices on behalf of students in teachers colleges are acceptable in the light of present knowledge? How does current practice in the use of such procedures compare with these acceptable standards? The treatment of the various phases of personnel services, selection, orientation, advisement, health services, extra-curricular activities, placement, follow-up, research in personnel, organization of programs, and desirable staffing furnishes guidance to the administrator in setting up and evaluating his program.

THE task confronted annually by the teachers college in recruiting the membership of a profession having so intimate a relationship to the well-being and proper education of youth has obvious implications for those engaged in personnel work. When the writer of this article undertook the presidency of a state teacher-training institution in 1929, it became increasingly evident to him that if demands upon the profession were ever to be realized to any satisfactory degree, an apparently neglected phase of teacher preparation

needed more study and more specific direction. However greatly the instructional programs and curricula offerings of teachers colleges and normal schools might be improved, the more subtle phase of preparation, that of preparing the entrant into the profession for successful entry as a person, would, if neglected, largely invalidate the effectiveness of the more obvious training requirements. Accordingly, the author undertook, under the auspices of the American Association of Teachers Colleges, an investigation, the scope and character of which is

briefly presented here. A more detailed report of the study is now available in book form.¹

THE SCOPE OF THE INQUIRY

The purpose of the study was twofold; first, to undertake the validation of acceptable personnel practices as they relate to this student group; and second, to discover to what extent these practices are operative in a representative sampling of the institutions set up specifically for the preparation of teachers.

After a preliminary investigation, the study was confined to a consideration of procedures in twelve functions: Selection of Students, Student Orientation, Health Services, Establishment of Proper Standards of Living, Personal Advisement, Administration of Extra-Curricular Activities, Placement, Follow-Up, Personnel Records, Personnel Research, Staffing, and Organization.

GETTING THE DATA

It was first necessary to compile, after exhaustive study, visit, and interview with workers in the field of personnel, particularly related to the college level, a list of some 365 specific administrative acts or techniques, without regard to presumable value, which represented as inclusively as possible the various ways in which the functions mentioned might conceivably be undertaken. This basic check-list was then printed and used

for two distinct purposes. The first purpose was to establish the value of the specific techniques; the second consisted in the use of the validated instrument as a measuring device to discover and evaluate the sufficiency of the administration of such services in teachers colleges. The first task is briefly described below. The second is reported under the findings of the study.

VALIDATING THE INSTRUMENT

College and university personnel administration has not progressed far enough to warrant the belief that each technique in all related fields has been subjected to the final scientific test of validity and reliability. The whole field of personnel has, however, been over a period of years the subject of such earnest inquiry by students and practitioners, that a respectable body of knowledge and practice has been established. Accordingly, the most fruitful method of constructing the instrument of measurement was thought to be recourse to the opinions of known experts. These experts were selected with extreme care, and with the aid of nationally known authorities in the field of personnel and of teacher preparation. Dr. Walter V. Bingham, Director of the Personnel Research Federation assisted the author materially by his knowledge of the outstanding personalities in the groups concerned, and by his personal willingness to obtain their consent to act on the jury. The sixty jury members who agreed to serve were representative of three distinct groups. The nature of the groups will be described presently. To each member

¹ Townsend, M. E. *The Administration of Student Personnel Services in Teacher-Training Institutions in the United States*. New York: Bureau of Publications, Teachers College, 1932.

of the jury was forwarded the check-list of personnel procedures referred to, with specific directions for ranking the same. Since the criterion sought was the degree of desirability of each separate technique, the juror was directed to record his judgments by entering in an appropriate column after the statement of each procedure, his estimate of its value on a five-point scale of desirability extending from -2 (indicating extreme undesirability), through -1 (somewhat undesirable), 0 (of doubtful desirability), $+1$ (somewhat desirable), to $+2$ (extremely desirable). Tabulations of the results were made in two ways. First the mean desirability of each of the 365 items was determined by obtaining the arithmetic average of the ratings. Then the mean desirability assigned by each group referred to above was obtained. It should be explained that Group I included outstanding theorists and authorities in the field of teacher training; Group II consisted of well-known workers in the field of college personnel; in Group III were twenty of the most generally accepted experts in the field of industrial personnel. Reliability of the instrument was established by computing the product moment coefficient of correlation between the mean judgments of Group I and Group II; Group I and Group III, and Group II and Group III. The following coefficients were found.

$$r_{I\ II} = +.875 \pm .008$$

$$r_{I\ III} = +.90 \pm .007$$

$$r_{II\ III} = +.83 \pm .011$$

It will be seen that the instrument may be relied upon to measure suffi-

ciency of program with a high degree of consistency.

THE FINDINGS SUMMARIZED

What of practice? What are teacher-training institutions actually doing in the realm of student personnel services? Admittedly, the best way to obtain the answer to this would be to visit each institution and, by use of the instrument described above, arrive at the facts. Since this was not possible, a sampling of 167 institution members of the American Association of Teachers Colleges was made by the use of the identical check list originally described, the author now being in possession of the facts warranting its use as a measuring instrument. By the simple substitution of another set of directions the check-list now became a survey questionnaire. Presidents of 105 institutions submitted usable returns, which consisted simply in checking opposite each technique actually in use at his institution. Confirmatory visits were made in sufficient cases to establish the accuracy of report.

Only the briefest summary can be given here of the findings since it will be evident to the reader that the complete enumeration of the same would require space far in excess of a brief paper such as this. For a full report, reference may be made to the published findings noted above.

It should be noted that "since the degree of desirability of each technique is the factor being measured, . . . the total worth in desirability of any such program in a teachers college is seen to be the algebraic summation of the means that a teach-

ers college uses to carry out the personnel services to which it lays claim."²

The teachers college using in the main either few techniques or those of low desirability is penalized by that fact. The opposite of this condition raises a total score. No further weighting is possible or needed.

Specific findings

Selection. Only 3 out of 105 institutions used a majority of favored techniques. Teachers colleges may be described as using very insufficient and inadequate selective procedures.

Orientation. The situation is found to be a little more promising here, but 36 per cent of the teachers colleges employ practically no orientation techniques.

Health Advisement. There is wide divergence in health advisement, scores running from -4.6 to +28.6 out of a possible score of +29.5 on the check-list. Twenty-one colleges report practically no health services beyond an examination at entrance.

Living Standards. There is a decided tendency to use approved techniques here, and forty-five colleges consider this phase of advisement of sufficient value to mention procedures in the annual catalogs. There is, however, a decided tendency to use restrictive measures against women students and to allow little opportunity for development of independent norms of living.

Counsel and Advice to Individuals. This is closely related to the two policies just discussed. Instead of using approved advisement techniques

a majority of colleges depend upon general preachment, mass advice, and disciplinary treatment. Important minorities are, however, widening their programs.

Organized Extra-Curricular Activities. Where attention to this phase is given at all, teachers colleges tend to use approved techniques. But a considerable number of teachers colleges leave this phase of advisement wholly to non-official agencies.

Placement. Teachers colleges may be described as giving very intelligent attention to placement, as contrasted to the meager efforts already disclosed.

Follow-Up. In follow-up, exactly the opposite is evident. Practically no attention is given to this important phase of personnel except in the case of isolated institutions.

Records. The situation in the field is decidedly open to improvement here. Many phases of student life, important in determining personal fitness and growth, are not subject to record in the majority of colleges.

Research. Ten institutions out of the total of one hundred five give really adequate attention to personnel research; but the organization, during the course of this study, of the Teachers College Personnel Association promises well for improvement in this important field.

Staffing for Personnel Services and Administrative Features. The fundamental reason for the extreme variability in personnel services is disclosed when a picture of the staffing and organization is presented. There is no staffing representative of majority practice except for the employment of deans of women and registrars.

² Townsend, M. E. Previous citation, p. 45.

Otherwise, staffing and organization must be described for the most part as very inadequate.

Summary of findings and differentiating factors

There is no positive evidence of regional differences in the sufficiency of personnel programs, except for the slight tendency for institutions in a state to have similar programs.

The correlation between per student cost and score on the personnel checklist is $r = +.10 \pm .076$, and a similar low correlation is found between size

of institution and sufficiency, this being $r = +.10 \pm .073$. This study must leave the question of the real differentiating factors unanswered, though there is evidence that these reside in the zeal and interest of the president himself.

The study aimed primarily to bring to the attention of administrators and staff members in teachers colleges the present status of personnel services to students, and to point the way to intelligent attention to this neglected phase of teacher preparation.

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Education and Research at a Mechanics Institute

Describing techniques of co-ordinating what the students do in school with their activities while at work, President Randall continues the series of articles on educational development based on research at Rochester Athenaeum and Mechanics Institute.

Methods followed in organizing content of instruction into teaching form are then described by Miss Hathaway, while Dr. Charters shows how systematic recording of incidents of behavior has been made to yield measurable results in educational guidance and character development.

IV. Co-operative Assignments

BY JOHN A. RANDALL, *Rochester Athenaeum and Mechanics Institute*

IN CO-OPERATIVE education the will to co-operate is the moving force on both sides. The efficiency of the plan depends upon a procedure through which good will can function. A clear statement of the objectives of the co-operative training is a natural pre-requisite to the planning of a suitable procedure and to securing joint agreement upon appropriate mechanisms between the employer and the school.

Technical objectives were emphasized in the early co-operative programs initiated in various places under the leadership of, or because of the example of, Herman Schneider when Dean of Engineering at the University of Cincinnati. His early followers regarded the employer's plant as an extension of the college engineering laboratory and of the craft shop. As experience has grown, attention has

been given to the possibilities of using the period of employment to further all of the objectives of education rather than the technical objectives only.

For the purpose of this discussion the term "Co-operative Assignment" will be used to cover any directions given by the school officials to guide the educational activities of students while away from school in co-operative employment. Education will mean any learning which is to some degree supervised. The objectives of such education involve all of the general objectives of the institution such as guidance and character building as well as the more specific objectives of the curriculum, of the course, and of the unit within the course.

As an aid to controlling the curricula at Mechanics Institute the teacher's manual for each course contains a

statement of the general objectives of the Institute, and statements of the objectives of the curricula for the department in which the manual is to be used. Each course outline has a statement of the objectives of the course as a whole, and each unit has at its beginning a statement of the objectives of the unit, and later in the discussion of each unit there appears a topic headed "Co-operative Assignment." These items in the teachers' manuals serve as a continuous reminder to the instructor that he should consider the question of making a co-operative assignment in connection with each unit. Under this heading are recorded both the assignments actually made in the past and those made currently. This procedure has been established to insure that all instructors give continuous attention to the matter of co-operative assignments.

Illustrations of co-operative assignments are given below. Analysis of the records of assignments of various instructors reveals the fact that they usually contribute to the achievement of skill in several types of activities. The illustrations given are classified under a single conspicuous activity.

I. Observation of the application of principles studied.

- A. A technical subject example: Report examples of oxidation observed on the job.
- B. A liberal subject example: List observed variations among individuals with respect to the degree of prejudice or open-mindedness with which they receive and carry out orders involving good policy or changes in method.
- C. A technical and orientation example: List ten well managed per-

sonnel problems observed on the job. In commenting upon this assignment, the instructor said, "They came back to school eager to relate their experiences and observations. They were much surprised at the countless personnel problems which had come up, many of which were handled so tactfully and quietly that no regular employee was conscious of them."

- II. General Observation. The normal development of the student requires that he be increasingly alert, that he have discriminating judgments about events of which the instructor has no advance knowledge. Observation of these events is stimulated and improved by encouraging students to bring in case material bearing on every phase of school work. By the way these materials are reported the instructor has an opportunity to stimulate interest in making additional observations and in improving techniques of observation.

III. Data assembling. Examples:

- A. Bring in sample menus.
- B. Bring in case materials on topics announced for the following month's school work.

IV. Problem hunting. Example:

- A. Search for series of menus which illustrate good dietary balance at a minimum cost and a contrasting series which provide dietary balance only at high cost or not at all.

V. Curriculum checking. Example:

- A. Inquire of your immediate superior (in employer's plant) and report to the class concerning current practice on the activity under discussion. This type of assignment takes care of the frequent situation in which the student questions the practical importance of technical problems, equipment, procedures, and statements of fact as presented in class. Arrangements

for this kind of checking in most cases have been made in advance through the supervisor and it is good practice for the supervisor to be informed of all such assignments.

VI. Research. Example:

- A. Prepare a department sales manual for a given department in a store for which no manual has been previously prepared.

VII. Report to Employers. Several employers have required co-operative students to write monthly reports descriptive of their experience. These reports often include both careful analyses of the operations the students perform and the relationship of these operations to the total plan of production throughout the plant. These analyses deal not only with equipment but with human relationships as well. Critical suggestions are made of improvement of equipment, of processes, and of organization procedures. It has been found good practice to keep these reports confidential and to retain them in the possession of the employer. This is important if students are to be encouraged by employers to come to grips with confidential and secret processes and policies. The reports are commonly read by the employment manager or other official, and reviewed in conference with the student. The instruction given by company officials in matters of fact and matters of technique is both highly competent in its quality and thoroughly acceptable to the student. Superior results are observed in achieving general guidance objectives as well as technical objectives. Normally, the record of the employer's assignments and the student's rating upon it is filed at the Institute once a month. The most common topics are:

- A. Description of operations.
- B. Description of product.
- C. Suggestions.

VIII. Habit building. The supervisors at Mechanics Institute have entire charge of all student personnel problems including those of co-operative employment. The supervisors are completely responsible for both curriculum construction and curriculum administration. Accordingly, under their direction falls faculty effort directed toward maturing student character and toward the achievement of other general objectives. The supervisors are frequently called in to counsel by employers and their representatives to discuss transfers of co-operative students from job to job within an organization. There are frequent occasions to transfer students from one employer to another. These, together with routine procedures, bring each student's case to the attention of the supervisor at regular intervals. Frequently, the supervisor has occasion to arrange with the employer for special types of assignments.

- A. Dependability assignment.
- B. Speed assignment.
- C. Thoroughness assignment.

IX. The technical library search.

- A. Problems arising in industry are valuable as library assignments if supervised.

X. Theory questions. Examples:

- A. Individual instruction procedures are being experimented with extensively in connection with several curricula. Students working on this plan take with them during their work period instruction materials of the theory unit to be taken up in the classroom in the next school period. They commonly make extensive preparations during their work periods and frequently confer with their associates at their place of employment upon questions which they would discuss with instructors if they were in school.

- B. Text, problems, and general read-

ing are assigned in anticipation of school work during the following period.

The evaluation of the results obtained from co-operative assignments presents a difficult problem. Each type of assignment raises the question as to the best practice of checking the quality and the quantity of performance of that task. No statistical attack has yet been made on the results obtained from these assignments, or on the extent to which they make anticipated contributions to the achievement of objectives. This attack will be delayed pending a re-statement of some of the more general objectives in terms of student behavior. Many who favor the co-operative plan are moved to do so by the conviction that through it exceptional results are achieved in guidance and in character building. The belief is strongly held that initiative, dependability, and the capacity to render sound social judgment in action are greatly matured by co-operative employment. Fortunately some measurement specialists no longer consider the difficulties of measurement in this field insurmountable, and it is hoped that measurement may be undertaken later which will give evidence to support or modify these opinions.

Those coordinators and other members of the faculty in most intimate contact with the work believe that close attention from faculty, supervisors, and employers bring about the large values accruing to students from co-operative assignments and employment. The amount and quality of attention given by employers is subject to increase through the joint action of

the employing personnel and the faculty. The collaboration through which activity analyses are secured, reports exchanged, and co-operative assignments made, tends directly to focus the instruction upon essentials and to produce conditions favorable to a well-knit integration for the student. At the same time it tends to open up possibilities of further co-operation between the teaching staff of the school and the potential teaching staff of the employer.

The faculty believes that the values of co-operative training outweigh those attainable by full time instruction. For the present, at least, we shall have to be content to measure our success in achieving our objectives and in realizing the desired values by the popularity of our program with employers, faculty, and students.

One supervisor, commenting upon the possibilities of further educational results through such co-operation says, "it is all unmined gold ahead."

A member of the faculty whose students are all employed reports the following:

"This class discussion of one another's jobs, duties, problems, solutions of individual problems, and policies of management, is very stimulating to each one. Each is keenly interested in what the other student is doing, and in comparing experiences. Curiosity and powers of observation are stimulated. All students profit by the observations and experiences of the others. In writing the report, various duties performed are summed up, new duties are recorded as progress for the month, problems faced are stated, the progress made is analyzed, and problems formulated with which they need help during the month at the Institute. In telling of the month's work-experience, the student gets much satisfac-

tion, and is eager and proud to have the others know what he has been doing.

"Some of the results and benefits we have experienced by using the co-operative assignments are:

"1. The students gain a sense of progress in the mastery of duties.

"2. Often the work-experience is largely manual and the co-operative assignment calls for reflection upon and evaluation of this experience—an intellectual activity which builds the habits essential for growth on the job.

"3. It often stimulates students to seek on their own initiative explanations and solutions for problems encountered.

"4. It stimulates the student's interest both in his work in school and on the job. It helps him to explain practical work on the job in the light of classroom theory and to see a reason for each.

"5. It makes the connecting link between theory and practice in the student's mind, which is very difficult to do in an imaginary, abstract way.

"6. It makes the student more receptive

to new and different ideas and methods, it provides an opportunity for evaluating diverse managerial practice. Thus the student gets more information, and of a wider variety, while on the job than he otherwise would. It enables the instructor to make better practical application of the principles taught because he understands the student's experiences and opportunities for experience better."

At present and probably for a long time in the future the primary condition for the success of co-operative programs will be tactful and wise co-ordination of the efforts of employers and teachers. Skillful handling will bring about a continual growth in the use of such a procedure as the co-operative assignment. The improvement of this tool is an important item in the general program of strengthening the hands of those who are conducting co-operative programs.

V. Organizing Content of Instruction into Teaching Form

By GEORGIANA W. HATHAWAY, *Rochester Athenacum and Mechanics Institute*

THE process of organizing content of instruction into teaching form includes the setting up of curricula, the formulation of courses, and the development of units of instruction. A curriculum at Mechanics Institute is defined as a training program heading towards one or more major occupational objectives, and extending, in typical cases, over a period of three years. A curriculum normally comprises a group of courses, each of which has minor or proximate objectives closely related to the major objectives of that curriculum.

Courses are made up of units of instruction, each of which has its own immediate objectives which contribute definitely to the objectives of the course and of the curriculum as a whole. Theoretically, the organization would proceed from curriculum to courses to units of instruction. In actual practice, organization takes place in any order and at any point that best suits the convenience of the moment. Moreover, since a curriculum is never regarded as finished, materials of instruction are revised, reorganized, and enriched continuously. In all some

one hundred and fifty courses, coördinated into approximately twenty-five curricula, have been prepared at the Institute.

Responsibility is placed upon the supervisor for coördinating instruction in all courses in the curriculum under his charge. The faculty coöperates with him in classifying the activities involved in the occupational objectives, in allocating them to courses and to course topics, and in producing a working first draft of a syllabus covering the entire curriculum. In the process of allocation, both the establishment of an effective sequence of activities and a balanced distribution of time are taken into account. Where these two considerations conflict, the best compromise is made that can be devised at the moment. This analysis into topics and sub-topics is eventually carried to within one step of arriving at the obvious details of instructional material. It now remains to divide the syllabus into units of instruction.

A unit may cover one or more of these topics or sub-topics of the course or, on the other hand, it may be only a part of one of them. The controlling idea in breaking up each course into units is the selection of an area of instruction that the student can grasp as a whole. The decision as to the amount of content to place in one unit is based upon pedagogical rather than upon logical considerations. In some instances the time schedule has been an important factor in determining the extent of a unit. For example, in coöperative classes, each unit may be designed to cover all the topics to be taken up in a four weeks' period of in-

struction. In most coöperative curricula an effort is made to organize the program so as to permit the student to complete at the end of a four-week class block the classroom survey of the unit on which he is working.

Logically the complete outline of a syllabus for each course in the curriculum should be arrived at before any units are produced. In practice, the influence of the expert opinion of each faculty member continuously modifies the initial outline which resulted from a consideration of the objectives and activities only, and various items are included in the outline and in the instructional materials which the experience of the teacher indicates are essential to rapid and clear mastery on the part of the students. This process of addition and modification is continuous throughout the preparation of instructional materials and the teaching of the course.

When supervisor and faculty have decided specifically upon what should be taught in a course, the instructor is expected to teach that course in any manner acceptable to him provided only that the competent and faithful student shall have attained, at the end of the instruction, the specific outcomes indicated for the course.

In organizing the material into teaching form the faculty agreed that due consideration, in the preparation of each unit, should be given to nine factors as follows:

First, since the Institute is committed to the policy of individualized instruction whenever practicable, and since good educational practice avoids requiring a student to study again what he has learned previously, *pre-*

tests should be given in connection with many of the units. Pre-tests reveal that certain students have a wide and unexpected acquaintance with some of the units of a course. In other units it is apparent that students know so little about the material to be presented that nothing is to be gained by giving pre-tests, and they are omitted. In form the pre-test may be a paper test or a behavior test. Whether or not the instructor shall use the pre-test, and what form he shall use, is left to his judgment.

Second, since the content of each unit of a course is validated with reference either to the activity lists for that course, or to the service which the content of the unit is to render by way of prerequisites to subsequent units, or to both, a statement of the activities, and of units served, should be presented at the beginning of the text material for each unit. This *itemizing of activities* and of units to be served has the advantage of directing the instruction of the teacher, and of informing the student as to the specific function of each detail of instruction he is called upon to master.

Third, since the faculty of the Institute is committed substantially to the idea that the development of traits of personality is at least coördinate in importance with knowledge of subject matter and skill in operation, the outstanding *traits of personality* which are needed for the successful pursuit of the training objectives should be listed in connection with each course, and these specific traits should be recorded as part of the course descriptions.

Fourth, since the holding up of definite goals to students is in line with

accepted educational procedures, the major *objectives* of each course and the subordinate objectives of each unit in a course should be formulated, written up, and made available to the students in that course.

Fifth, since a guide is useful as a means to avoid digressions from the specific task in hand, the content should be outlined in *syllabus* form, with references to selected texts. In cases where nothing quite to the point could be found in print, text material should be prepared and placed in the hands of students.

Sixth, since the course is organized with a working hypothesis in mind as to methods and procedure of presentation, an initial record should be made of the *plan* contemplated. Moreover, since there is always room for improvement in the materials and methods of instruction, each instructor, as he teaches a course, should record those *suggestions* to be discussed with the supervisor. Such of them as are judged valid and helpful are incorporated in the guide for the course. Those suggestions would include materials for instruction and illustration, and statements as to principles to be emphasized, pre-requisites found desirable, and service units that might be added with profit.

Seventh, since the justification for any teaching procedure is to be found in the results attained, *mastery tests* should be set up as a means for indicating to instructor and student the degree of success attained in the pursuit of the objectives of the unit.

Eighth, since the Institute is committed to the placing of responsibility as squarely as possible upon the shoul-

ders of the student, *assignment sheets* should be prepared, mimeographed and placed in the hands of each student. The ideal form of assignment sheet would be one in which the directions were so explicit that the student would not need to ask the instructor questions about the preparation of the assignment. At the beginning of a course the assignments should be presented in full detail, but they should be shortened for later units as the student acquires a growing ability to work on his own initiative and as instruction in the subject matter of the course progresses.

Ninth, since the Institute operates largely upon a coöperative plan, by which the student, during the year, alternates between a month of study at the Institute and a month of work on an outside job, coöperative work should be meshed in with classroom study. To this end *coöperative assignments* should be prepared; that is to say, when the student leaves classroom instruction to participate in productive activities on the job, each instructor should provide him with a series of questions mutually related to the classroom and to the job, which he should study on the job and report on when he returns to classroom duty.

These nine items, the faculty felt, would serve as a check list for the guidance of instructors in writing up the units of instruction for each course. The faculty also agreed that manuals for teachers and manuals for students, incorporating all essential materials should be made available for each course. The *teacher's manual* should include the objectives of the course and specifications for grading, a list of

activities upon which the course is based, traits of significance for the successful completion of the course, methods of teaching, individual units of instruction prepared in accord with the procedure described above, including pre-tests and mastery tests wherever judgment indicates that they are useful. The *student's manual* should include everything in the teacher's manual except the tests, the syllabus, methods of teaching, and an occasional assignment sheet which is to be distributed at the beginning of a class, and not at the beginning of the course. It is the intent of the supervisors and instructors in organizing and preparing student manuals to make them contribute in establishing such morale, insight, and interest in the student as will result in acceptance by each student of the full responsibility for mastering the assignments, on his own initiative, and achieving a high degree of skill in the activities of his chosen field. In order to insure the full coöperation of the student it is important that he know the reasons for making each assignment and for including each unit in the course and each item in the unit. To this end it is usual to include in the student's manual, for each unit, a statement of the objectives of the unit, a statement of the activities on which the unit is based, and questions designed to stimulate his interest and to promote his understanding of the unit.

The teacher's manuals serve as guides and as permanent records. Their superior usefulness has been demonstrated many times. They have resulted in clear-cut placing of responsibility for teaching about each activity, including the emphasis needed.

They have shown the extent of each course with suggested time divisions by units. New instructors can be given a guide for starting a new job with the benefit of the experience of previous instructors. In emergencies, substitute teachers can be given directions and can carry on effectively with a minimum of help. Instructors in one course can see what is being taught in other courses. With the content for each course established in this way, instructors find that time and energy can be concentrated on how to improve materials and methods to develop in the student the attitudes, the habits, the character needed for successful work in the field he has chosen. The manuals have greatly facilitated individual instruction, and have released the energies of all concerned to contribute new materials and new techniques as they suggest themselves and can be validated.

Recognizing that the interests and responsibilities of men and women are broader than the vocations with which they are connected, the Institute offers liberal courses, dealing with extra-vocational problems that touch the economic, social, and moral life of the students. The case method of instruction is employed in all liberal courses. Cases, in the form of current events, expressions of opinion, or records of actions, of decisions, and of judgments having a direct and intimate bearing upon problems that confront the individual in the conduct of his life, are presented for open and free discussion. Opportunity is afforded for extensive readings that present all sides of the problem in hand, and full responsibility is placed upon the stu-

dent for the formulation of his own decisions and judgments. The organization of liberal instruction materials has proceeded somewhat more slowly than the organization for occupational courses. This is due, primarily, to the nature of the subject matter which does not lend itself readily to objective validation in accord with standardized objectives and practical activities. As experience in the organization of liberal courses ripens, and as the techniques in the organization of occupational curricula are perfected, however, the way to search out standards of objective validation, and to apply validation techniques that will contribute to the steady improvement of the liberal materials of instruction, is rapidly becoming clearer.

In summary it may be said that the procedure in turning raw material into instructional form consists first in the arrangement of the content into such an outline as seems best to the instructor for the purposes of helping the student to gain the knowledge, skills, and attitudes necessary for the successful carrying on of their vocations and of their extra-vocational lives. The students are provided with statements as to the practical uses to which the materials of instruction can be put and as to the traits of personality that they should develop in order to achieve an effective mastery of that material and of the activities in which they now and later participate. The students are given complete student assignment sheets that will guide them in their work in school, and coöperative assignment sheets which will direct them in the correlation of their experience on the job with the instruction in the class

room. The instructor uses pre-tests to find out what the students already know about the subject and mastery tests at the completion of the work. For his own personal assistance the instructor records specific methods of teaching the units against the time when he has to teach them again.

This procedure omits no essential step that intervenes between the point where curriculum construction begins and the point where detailed instruction material is in form to be put into the hands of the student. It is designed to so integrate the program of instruction with life needs that attention at all times is focussed sharply upon essentials involved in the attainment of specific and clearly defined

objectives. It involves laying out the work in advance, anticipating as far as possible any difficulties and problems that are likely to arise, but leaving the plan subject to revisions and extensions as experience indicates, and flexible enough, in the actual conduct of instruction, to admit of prompt adjustments as unforeseen difficulties and problems arise. It provides the basis for specific guidance, motivation, instruction, and rating in both technical skills and personal adjustments, and aims at enlisting, as fully as possible, the body, mind, and heart of the student in the active pursuit of ends which he sees steadily, and which he recognizes as being worth while for him to pursue.

VI. A Character Development Study

By W. W. CHARTERS, *Ohio State University*

CHARACTER development is an accepted objective of all educational institutions. In practice the great majority of schools, however, allow character to grow incidentally as a by-product of school life. A few institutions attack the problem directly and in line with carefully planned policies. Of this small number Rochester Mechanics Institute affords an interesting example of a definitely organized program of character training which the writer has watched as a frequent spectator during the period of its evolution. In this institution, character evidences are recorded informally day by day as a regular duty of the instructors; the conditions so revealed are used by the

faculty to help the student make personality adjustments. Moreover, personality factors are given greater weighting than scholarship in his general guidance; and diplomas are explicitly awarded upon the basis of both intellectual achievement and traits of personality.

The conventional type of record was set up originally to meet the needs of the employment office. The faculty selected a list of traits considered to be of importance to employers, and the instructors graded these traits with the usual notations of A, B, C, D, and E. The result produced the usual situation. Strangers who inspected the grades were at a loss to know just what the grades indicated about the

essential personality of the student. Furthermore, the grades were of little use in the training of students because they were usually given at the end of a period of instruction as the student was leaving the instructor's classes.

From 1920 to 1930, several factors operated to create an interest in the development of the personalities of students. The evidence from industry cumulatively indicated that executives were more concerned about the dependability, ambition, and co-operativeness of students than about their vocational information and mechanical skill. They were convinced that in personality rather than in skill were to be found the essential qualifications for success. The second may be viewed as a by-product of the first. In this conclusion they agree with parents and laymen everywhere. And it is fortunate for all concerned that a good character is a support to the acquisition of information and skill and that personality, information, and skill can be better developed together than separately.

Within the institution the problem was made more acute by the necessity of fairly awarding credentials, and of honestly selecting members for the honorary society of the Institute. It is the announced policy of the Institute to give substantial weighting to the records of character traits in deciding the class of credential awarded at graduation. Admission to the Henry Lomb Society was obtained upon the consideration of three factors—scholarship, citizenship, and character. A student must be a superior scholar, an interested participant in extra curricular activities and have superior record

of character. The first criterion could be measured by grades, and the second by the record of the quality and quantity of student contacts. The third could not be gauged by the conventional grades on lists of selected traits.

Within the faculty itself the conviction grew that the institution should attack the problem of personality building as seriously as that of imparting information and developing skills. Consequently in 1930 a plan ripened. It was modified by experience, and in 1933 has taken the following form.

First, instructors record significant trait actions or "anecdotes" about the students each day. Such statements as these occur: voluntarily contributed much to class discussion; wrote an unusually clear and concise theme; still very hesitant; notebook rather chaotic; elected to student council but has not yet reported. The purpose of these statements is to record the observed characteristics of the students in meaningful phraseology rather than in colorless letter symbols. That these "anecdotes" actually provide a picture of a personality is clearly demonstrated in the four notations furnished by one instructor for one student during four weeks (see table 1). The reader secures from these dozen sentences a very striking picture of an interesting student—a picture which would be completely blurred and wholly unintelligible if recorded as A in aggressiveness, A in conscientiousness, something else in honesty, and so forth.

These descriptions are recorded daily as observed and turned in to the supervisor or head of the department once a week. The supervisor assembles the descriptions in each student's folder

and has them available for use as emergencies arise or for summary at appropriate times. Such summaries are made at least once each year and for freshmen and problem cases several times each year. They thus become cumulative during the years of residence of the student. The number of anecdotes grows rapidly. For instance, the figures before me for the fall of 1932 show that up to November

supervisor exchanged impressions it appeared that the psychiatrist had uncovered no characteristics that were not already recorded among the anecdotes.

Each supervisor or head of department uses these assembled data in his work with students. Frequent contacts are entirely practical because the number of students under the direction of a supervisor is approximately

TABLE 1

DATE	TRAIT ACTIONS
October 14, 1932	Argues tenaciously and ably for her points. Frequently volunteers.
October 21, 1932	Her recitations are unusually able. Tends to monopolize class discussion in a way which may eventually make her enemies. It seems a matter of pride with her to win every argument. She is slow to admit she is wrong. I consider this a good trait, but I realize it may get her into trouble with some employers.
October 28, 1932	When I asked another student to conduct the class, she fired questions at him so thick and fast that I wondered if she were jealous. Sincerely believes that business is so dishonest that a person must be dishonest in order to succeed in it, and that no blame should be attached to a person who merely indulges in the same sharp practices which everybody else uses. (Said this in class discussion. Great care should be taken not to use this information in such a way as to modify the frankness of her class reactions.)
November 4, 1932	After being absent, she had <i>more</i> than the normal amount of work written up instead of <i>less</i> .

the supervisor had collected from six instructors an average of from 15 to 20 such observations on each student in his department.

How penetrating the accumulated emphasis of these anecdotes is was put to a test recently when a psychiatrist came to the faculty for information about a student of the class of 1933 who had been brought to him as a mild case for observation. As he and the

one hundred and they stay in the department for three years. The uses are varied. First of importance is the obvious direct personal use with students in interviews. When the supervisor studies the numerous anecdotes of the instructors, as indicated above, he discovers the observed strength and weaknesses of each individual in so far as these rather searching observations reveal them. The students who have

been admitted to the Institute are on the whole substantial persons with points of strength. Sometimes they have no serious personal weaknesses that need attention. To such the interviews about themselves may be entirely complimentary,—reassurance about their good qualities, expressions of the confidence of the instructors, and of the likelihood of their broader success in later life.

In other cases the student's strong qualities may be restrained and circumscribed by the force of complementary weaknesses. The aggressive and vigorous girl in the illustration may have a wrong view point toward essential values. Then it becomes a supervisor's obligation to talk these matters over with the student. As a matter of institutional policy the supervisor, with the total pattern of the student's character in mind, starts with his strong qualities and builds upon them in strengthening his deficiencies. Rapport is established. Things to do to overcome the defects are discussed. The student is given assignments much as in a school subject. If he lacks initiative, he agrees to make himself do this or that unusual thing. If he is not co-operative, the instructor and he agree that certain activities should be carried on. If he lacks dependability, out of the discussion evolves a program to be followed in strengthening the trait. Then the student makes reports on his assignments from time to time until the instructor is satisfied that the student has learned the techniques of improvement and is well on the way to eventual mastery.

In still other cases it becomes apparent that the weakness is greater than

the strength—that there is little that the supervisor can build upon, that the qualities of dependability, honesty, initiative are not developed sufficiently to warrant the Institute in recommending the student. In these occasional cases, after the faculty has done all that it can do under the prevailing conditions, it advises the student to take up some other work. Obviously no student can be made perfect and some, even after careful selection, are beyond the ability and sagacity of the faculty to change materially.

A less obvious but more important use to which the supervisor applies the reports is the general planning of the program through which the student is guided. A typical item under this heading is the placement of students in co-operative jobs. Half the time of the student is spent in service in the field. These training positions are widely varied as demanded by the training program. They vary according to the personality of the foreman and the peculiar details of the plant. Consequently, one student will fit into one job better than another and to meet these variations the intimate picture of each student is useful in matching his qualities against the job which is best adapted to his characteristics.

In this program of development the instructor bears a large share of responsibility. Constructive habit building is his function and in the instructor's guide there is noted for each unit a list of traits which the classroom activities may be expected to mature. In general these are by-products of which the instructor is more conscious than is the student. Moreover, the instructor attends to minor defects such as punc-

tuality, class room conventions, and clarity of expression. The more serious defects are considered in conference with the supervisor. When concerted action is necessary, one or more faculty members are asked to assist in the program.

The personal qualities necessary for successful teaching of this sort are apparent. The supervisor and the instructor must have a personal, friendly interest in the students. An adviser must have good common sense. He will not attempt too much, he will not pry unnecessarily into personal affairs, and he will not be too sure of himself. Rather he furnishes students with data about themselves and in friendly fashion helps them to work out their own problems for themselves. He is a combination of parent and family friend.

The development of the program of guidance has produced a number of interesting techniques. To secure significant anecdotes from the instructors was an early problem. From the trial and error method there evolved useful specifications. A committee collected and classified a list of several score of trait actions which were obviously of significance to show adequate or inadequate development of a trait. These were discussed, mimeographed and distributed. The anecdotes turned in were reviewed by the supervisor and instructors and were evaluated as being significant or perfunctory. It was found also that the mere requirement of making reports caused the instructors to be more observant of their stu-

dents and thus more facile in detecting characteristics which would portray personality. That is to say, improvement came from practice, criticism of records, and revised specifications.

With experience the faculty finds that a single anecdote gives insight into the quality of a number of traits. Often an anecdote suggests a unified picture of the personality. The anecdote may be so written that it is synthetic rather than analytic in its emphasis. It may even be poetic in its quality of appreciation.

At first the faculty was much disturbed by an attempt to mark one set of activities through the regular scholarship grades and a second set through the anecdote records. There followed a clear understanding that the whole activity pattern is interwoven and consequently a conviction that performance in the scholarship area itself should have the benefit of the flexible descriptive quality of the anecdote. Expanding the use of these techniques into the scholarship side of the picture is now under consideration and the adoption of present practices is only tentative until this extension has received further study.

The development of student personality is not new as an objective of educational institutions, but in practice it is usually an objective only hazily pursued. The Institute's project for making personality development a real part of its training program, while still in the formative stage, is one of the most interesting experiments in the nation.

News Notes

VOCATIONAL GUIDANCE CAMP

Stevens Institute of Technology will hold its third annual vocational guidance camp for preparatory school boys, August 19 to September 2. The fundamental purpose of the camp is to help young men to make intelligent choice of type of college and career.

The various methods of vocational guidance will be used, including vocational try-out and aptitude testing. Among the lecturers will be Joseph W. Barker, Robert C. Clothier, Harvey N. Davis, Robert Ridgway, and Roy V. Wright. Johnson O'Connor and W. V. Bingham will be in charge of psychological studies and conferences.

COLLEGE GRADES, CAMPUS ACTIVITY, AND SUCCESS

An article by Anthony Anable in a recent issue of *Chemical and Metallurgical Engineering* describes a striking positive relationship between college grades and extra-curricular activity on the one hand, and later financial success on the other. The conclusions were based on study of some 800 men who were graduated from Massachusetts Institute of Technology between 1917 and 1930. Those who started lowest on the financial ladder showed the least tendency to work up. The scholastically superior men secured the best jobs on graduation and rose most rapidly, while those who had the poorest offers at first remained at a low salary level. At the end of fourteen years there was a gap of \$10,000 between the median salaries of the two groups.

VOCATIONAL SERVICE FOR JUNIORS

The 1932 Annual Report of the Vocational Service for Juniors, New York, is the story of an active and alive organization doing an increasingly efficient job in the

face of necessary budget cuts. The report describes progress in junior placement, scholarship grants, the apprentice training program for personnel workers, employment and training information service, and other activities. The Vocational Service for Juniors is directed by Mary H. S. Hayes.

JOURNALS IN VOCATIONAL GUIDANCE

A list of European and American professional journals dealing with problems of vocational guidance is given in the March, 1933, issue of *Bulletin de l'Institut d'Oriental Professionnelle*,¹ pp. 88-89.

This list is divided into three parts: (1) "journals devoted exclusively to vocational guidance," of which there are 14 journals in seven countries; (2) "journals giving an important place to vocational guidance," of which there are 4 journals in four countries, and (3) "journals giving a certain emphasis to vocational guidance" of which there are 13 journals in five countries.

Altogether there are 31 journals in nine countries and in seven languages. Fifteen journals are in French, 5 in English, 4 in German, 3 in Swiss, 2 in Spanish, and one each in Dutch and Austrian. American readers may not be entirely satisfied with the completeness of the representation of journals in the United States, only four being listed: *Vocational Guidance Magazine* in group one, *Personnel Journal* in group two, and *Journal of Applied Psychology* and *Journal of Educational Research* in group three.

The same issue of the *Bulletin* carries a list of the fifteen offices of vocational guidance in the Paris region. In fact, each issue contains notices and descriptions of

¹ Published by the Institut at 41 Rue Gay-Lussac, Paris; edited by M. Henri Pieron, directeur de Laboratoire du Psychologie de la Sorbonne.

new developments of vocational guidance in Europe and the United States, new offices opened, or new tests developed.

STUDY TOUR OF THE UNITED STATES

The International Management Institute of Geneva, Switzerland, is planning to conduct a study tour of the United States. From October 13 to November 2 the group will observe modern management methods in a number of industrial and commercial enterprises in this country. The itinerary extends as far west as Chicago and includes eight cities.

TEST SCORING TABULATOR

The scoring of multiple weighted item tests, such as the Strong Vocational Interest Blank or the Bernreuter Personality Inventory, is a notoriously onerous task. A moderately fast clerk takes approximately 9 hours to score by hand the Strong blank for 27 occupations. Richard Warren, Ben. D. Wood and the staff of the Columbia University Statistical Bureau have worked out a new method which does the same job in half an hour. The method involves the use of

the Hollerith Tabulating Machine. A typewritten description of the technical procedure is on file in the library of the Personnel Research Federation. It will be loaned to members.

FORTHCOMING EVENTS

JULY 10 AND 11

Institute of Occupations, held in connection with the Biennial Convention of the National Federation of Business and Professional Women's Clubs, Chicago.

AUGUST 23-26

Sixteenth Annual Conference on Industrial Relations, National Council of Y. M. C. A., Silver Bay, New York.

SEPTEMBER 7-13

Annual Meeting of the American Psychological Association, Chicago.

OCTOBER 2-6

Twenty-second Annual Safety Congress, National Safety Council, Chicago.

NOVEMBER 16 AND 17

Twelfth Annual Autumn Conference, Personnel Research Federation, New York.

DECEMBER 7-10

Annual Conference, American Vocational Association, Kansas City.

Personnel Books

EDITED BY O. MILTON HALL

RECENT BOOKS ON UNEMPLOYMENT RESERVES

JOB INSURANCE. By John Bertwell Ewing. Norman: University of Oklahoma Press, 1933, 263 pp., \$2.50

A NEW PLAN FOR UNEMPLOYMENT RESERVES. By Alvin H. Hansen and Merrill G. Murray. Minneapolis: The University of Minnesota Press, 1933, 75 pp., 50 cents

ESSENTIALS OF A PROGRAM OF UNEMPLOYMENT RESERVES. By National Industrial Conference Board, Inc. New York: 1933, 68 pp., \$1.00

UNEMPLOYMENT INSURANCE AND RELIEF IN GERMANY. By National Industrial Conference Board, Inc. New York: 1932, 107 pp., \$2.00

Reviewed by EDWARD S. COWDRICK, *New York*

Although prophecies that the legislatures of 1932-33 would add several unemployment insurance laws to the list now occupied exclusively by the Groves Act in Wisconsin have failed of fulfilment, there is no diminution in the interest in unemployment insurance benefits, public and private. Recent months have seen the appearance of several additions to the already voluminous literature on unemployment relief, including several excellently prepared reports of State Commissions. The volumes here noted present several aspects of the subject and from diverse points of view.

Professor Ewing has written a general treatise on unemployment insurance, basing his findings largely upon the experience of Great Britain and upon the Groves bill in Wisconsin. Throughout the book the history and theories of unemployment insurance in Wisconsin are heavily stressed. This is only natural in view of the fact that the author, now assistant professor of economics at the University of Oklahoma, took his doctorate at the University of Wisconsin and was one of the collaborators in the preparation of the Groves bill. The experience of Wisconsin as a pioneer state in legislation for industrial accident compensation, Professor Ewing believes, is largely respon-

sible both for the movement in favor of state unemployment insurance and for the principle of prevention embodied in the Groves Act and in most proposed laws.

The book gives a clear and illuminating analysis of the difference between the theory of prevention and that of relief, and of the extent to which each of these principles has been followed by American proponents of unemployment benefits. There is also an adequate discussion of the distinction between unemployment insurance, characterized by a spreading of risks, and unemployment reserves, built up by individual companies.

Much of the book is taken up with a discussion of methods of administration under the Groves law. Dr. Ewing recognizes that the law imposes some financial burdens upon employers and that there are possibilities of evasion, but he believes these are incidental disadvantages which will not interfere seriously with the beneficent working of the statute.

A recent report of the Ohio Commission on Unemployment Insurance is treated briefly in the text and at greater length in an appendix.

The pamphlet by Hansen and Murray is an outgrowth of a study of unemployment

made in Minnesota by the Employment Stabilization Research Institute affiliated with the State University. Professor Hansen's plan—the pamphlet includes a suggested bill for putting it into effect—is intended specifically to relieve long-time unemployment. Accordingly, it provides for long waiting periods—a minimum of 8 weeks—and for payment of benefits up to a possible maximum of forty weeks in the first year of unemployment and twelve weeks in the second year.

In this respect the Hansen plan meets the requirements laid down by Sam A. Lewisohn in a paper recently read before the American Management Association. An important contribution made by Mr. Lewisohn was his insistence upon a clear-sighted discrimination between what he called “fair weather unemployment” and “hard times unemployment.”

The Hansen plan is contributory because “it is our opinion that it would be economically unsound to require Minnesota employers to pay more than 2 per cent of the payroll of eligible employees” and because the author estimates that a total 4 per cent contribution would be necessary. A bill based somewhat upon the Hansen proposals failed of passage in the 1933 session of the Minnesota legislature.

One of the last acts of the late Magnus W. Alexander as president of the National Industrial Conference Board was to initiate a study of unemployment reserves, with the idea of developing fundamentals that would be of service to American employers. The study was directed by Dr. F. Spencer Baldwin, of the Board's research staff, and received coöperation from the Advisory Committee on Industrial Relations and from a number of unofficial counsellors.

The report, put out under the title *Essentials of a Program of Unemployment Reserves*, reviews the whole unemployment situation, relief measures and legislative proposals, and recommends policies to be observed by employers who wish to set up voluntary plans.

Some of the most important suggestions follow: Coverage should be limited to the more stable and permanent employees and a plan should require not less than six

months' service for eligibility. A waiting period of eight weeks is suggested. Payment for complete unemployment should be equivalent to 50 per cent of average weekly earnings, with a maximum of \$10 a week.

As to contributions from employees, the report summarizes arguments pro and con and concludes that, in general, “the advantages of the contributory method of accumulating unemployment reserves outweigh the objections,” but that “practical considerations may lead the individual employer to reject it.”

If an employee leaves the service without becoming eligible for unemployment benefits he should be entitled to recover his own money, but the money which the employer has contributed for his account should revert to the fund.

Funds should be trusteeed and invested in the kinds of securities that are least subject to fluctuations. Under a contributory plan the board of trustees should consist of representatives of employer and employees in equal numbers, with an elected chairman.

The report of the National Industrial Conference Board on “Unemployment Insurance and Relief in Germany” is based upon a first-hand study made by Vaso Tripanovitch during a recent visit to Europe.

The first national unemployment insurance law in Germany was enacted in 1927. In this statute two types of relief were recognized: first, unemployment insurance; second, emergency relief. The law provided that unemployment insurance covering normal conditions should be financed entirely by employers and employees. Originally employees contributed 1.5 per cent of their wages and employers 1.5 per cent of payrolls. Workers in all occupations were insurable except agricultural employees and domestic servants and those in a few seasonal industries. Benefits were to be paid for a maximum of twenty-six weeks and were not dependent upon need; that is, the jobless man received his insurance up to that limit as a matter of right. After the expiration of the twenty-six weeks' benefits a person still unemployed automatically went on an emergency relief which was financed by the federal government and by the Communes (local authorities). Emergency relief was

payable for a maximum of thirty-two weeks and was dependent upon actual need. After the expiration of the twenty-six weeks of unemployment insurance and thirty-two weeks of emergency relief, a man still unemployed and in actual need became entitled to "welfare relief" financed entirely by local governments.

It will be noted that this German law made elaborate provision to cover the very point that has been left unprovided for in the Wisconsin law and most proposed American legislation—benefits for long continued unemployment due to severe business depression. This provision, however, did not prevent the collapse of the whole scheme. In the first half year the excess of disbursements over receipts amounted to \$23,000,000. The deficit increased steadily through 1930 and a part of 1931 and was made up by the government through subsidies or "loans." In 1931 the government gave the administrators of the unemployment fund orders to

balance the budget, regardless of the measures necessary. Accordingly, the administrators increased the contributions of employers and employees from 1.5 per cent of payrolls and wages, respectively, to 3.25 per cent, and at the same time the amount of benefits and the length of time for which they were payable were decreased. In this way the budget was balanced, and a small surplus was built up in 1931.

At the time the investigation was completed the unemployment insurance law had not been repealed but unemployment benefits on the insurance basis were gradually vanishing and "it is generally expected in Germany that unemployment insurance will eventually disappear as a system of mass unemployment relief. The changes made in the original provisions of the unemployment insurance law in June 1932 mark the collapse of the greatest experiment in social insurance that the world has seen."

DISPLACEMENT OF MEN BY MACHINES

EFFECTS OF TECHNOLOGICAL CHANGES IN COMMERCIAL PRINTING

Displacement of Men by Machines. Effects of Technological Change in Commercial Printing. By Elizabeth Faulkner Baker. New York: The Columbia University Press, 1933, xxii + 284 pp., \$3.50

Reviewed by SAMUEL J. BRANDENBURG, *Clark University*

"Printing and publishing forms one of the major industries of this country . . . Since 1920 it has employed one in every thirty-three of all manufacturing wage earners. In 1929 it paid one-twentieth of all manufacturing wages." In this same year printing and publishing ranked seventh among our industries in value added by manufacture (p. 6). Although small orders and local needs have resulted in the retention of many small presses and much handwork, the business as a whole has been highly mechanized in the course of the last fifty years. Inventors have been ever busy, and both employers and workers have been hard pressed to adjust themselves to new conditions. The technical and human problems resulting from these changes have brought forth a number of studies of the industry.

The present investigation, as the sub-title

implies, does not cover the whole field, but is concerned with "the mechanization of the commercial printing pressroom," and with the economic and social fate of manual press-feeders displaced by mechanical feeders. It is an attempt "to trace the exact nature of the mechanization process, to see how the workers in their collective action have responded to displacement, and to single out representative pressrooms for close observation in order to see how some workers actually fared" (p. 8). It is a "close-up" of an important segment of the entire industry, with special attention to the years, 1913-1929. Part I (Chapters I-IV) deals with technical progress and its effect on the workers, Part II (Chapters V-IX) with the impact of these changes on organized labor and labor's response thereto. Appendices (pp. 201-265) give statistical and illustrative

data and describe the author's procedure; a select bibliography (two and one-half pages) and an index complete the book.

The modernization of commercial printing pressrooms proceeded rapidly during the war years, less rapidly after 1920. The changes consisted chiefly in the replacement of old presses which required hand feeding by new models with automatic feeding devices. The installation of the new models was not confined to the great centers of commercial printing (New York and Chicago with 25 per cent and 17 per cent respectively of the nation's total output of this type of printing), but was country wide. (See tables and charts, pp. 18-22). Better pressroom equipment led to greater output per man, but the growing demand for printing more than offset the increased productivity, and total employment rose somewhat. These facts were confirmed by a careful survey of 53 New York City pressrooms over a five-year period ending 1929. This survey showed that the total number of presses in use increased 15.6 per cent; but while machine fed presses increased 47.1 per cent, hand fed presses decreased 18.6 per cent. Total number of employees increased 16.4 per cent; but pressmen increased 25.4 per cent while assistants (chiefly press-feeders) increased only 9.8 per cent. In other words, the gain in employment was relatively greater for the skilled workers (pressmen) than for the less skilled (assistants); or, the number of skilled workers increased more rapidly than the total number of presses, the less skilled workers less rapidly. This indicates that the unemployment burden due to mechanization falls more heavily upon the less skilled employees hence the author's pointed suggestion that, if the industry as a whole continues to ex-

pand, hardship to the workers can be prevented or appreciably minimized if the workers, through their unions or otherwise, and the employers, co-operate to train men for the new tasks required by the new regime.

Of the two chief centers of commercial printing, New York is predominantly unionized, Chicago open shop. The two cities offer some interesting contrasts: In New York, a slower rate of technical change, a larger complement of men, a higher average wage, but a lower unit wage cost than in Chicago. This suggests that some factors other than the "tyranny of unions" may be responsible for the "migration" of commercial printing from New York.

Several chapters tell the story of negotiations between organized workers wanting to keep their jobs, and organized employers driven to production economies by hard competition within the printing trade. Agreement is more difficult to attain because of dissension within the union, which comprises both pressmen and assistants. The latter, press-feeders in an earlier day, now displaced by the automatic press and spurned by the pressmen, are embittered and in no mood for peace; as an occupational group, they appear to be doomed. Despite these obstacles some progress has been made among more socially minded groups towards "union-management co-operation." The profit motive, and individualism on both sides is perhaps not so sharp in recent years.

This painstaking study of the machine and its owner, of the man and his employer, comes at an opportune time. It will repay careful study during these months while we are experimenting with industrial recovery.

TALENTS AND TEMPERAMENTS

THE PSYCHOLOGY OF VOCATIONAL GUIDANCE

By Angus Macrae. New York: Appleton, 1933, 211 pp., \$2.00

Reviewed by ROY N. ANDERSON, *Teachers College, Columbia University*

The author of this book, who is head of the Vocational Guidance Department of the National Institute of Industrial Psychology, London, has written the book as a short introduction to the art of vocational guid-

ance. It is directed to the growing body of teachers, social workers and parents who wish to know about the methods used in this field.

The first chapter deals with the evils re-

sulting from irrational occupational choice. The vocational counselor, or "Careers Master" (as he is called in the English schools), "is charged with the duty of helping boys to obtain suitable employment." The guidance is generally carried on in public employment agencies under the central control of the Ministry of Labour, but is organized locally in many areas by the education authority.

The other chapters of the book describe the attempts made by psychologists to render rational vocational guidance. Under "Measuring Intelligence" the author covers the traditional topics: the Binet tests, group tests and theories of intelligence, with special emphasis on the Spearman two-factor theory. Under the title, *Testing Special Abilities*, the author describes performance tests, and tests for the measurement of mechanical ability; manual dexterity; verbal, arithmetical and other abilities.

A chapter on "Estimating Temperament and Character" contains theoretical discussions of emotionality, instincts, character, psychoanalysis; also discussions of various techniques: the interview, the questionnaire, rating scales, interest tests, etc.

The author next describes the part played by parents, teachers and physicians in the vocational guidance process. The discussion of the last-named specialist lends some uniqueness to the book, since in most volumes on vocational guidance this phase has not received ample treatment.

In a chapter devoted to the analysis of vocational activities, the author discusses the weakness of the occupational pamphlets

available, and the difficulties involved in studying occupations scientifically. In advocating a standardized schedule or outline for use in such investigations, it is unfortunate that he did not have access to, or failed to cite, the reports and recommendations of the Committee on Occupational Research of the National Vocational Guidance Association.

Chapter VIII consists of an attempt to correlate the analysis of the individual and the analysis of the vocational activities. The author points out that this is an art rather than a science.

The two concluding chapters have to do with evaluation and outlook for the future. The author summarizes the First and Second London Experiments to determine the value of psychological methods of vocational guidance, and the Birmingham Experiment—all of which have been reported in detail in previous publications.

Written in an interesting style, the book gives a comprehensive view of the psychological problems involved in vocational guidance. Its lack of emphasis on other phases, such as gathering and imparting information about occupations placement, etc., may be readily excused in view of the conscious limitation of the treatment indicated in the subtitle. The author has illustrated the various chapters with case studies. One concludes from a perusal of this book that the psychological methods employed in administering guidance in England do not differ greatly from those used in the United States.

THE TECHNICAL MAN SELLS HIS SERVICES

By Edward Hurst. New York: McGraw-Hill, 1933, 239 pp., \$2.00

Reviewed by HOWARD L. DAVIS, *New York Telephone Co.*

It is evident that the author of this book is a good salesman and understands the psychology of personality. The methods which he outlines should inspire those who are out of work to think up better approaches in their searches for employment. His advice should be helpful to both technical and non-technical graduates.

The first four chapters emphasize the desirability of a man taking stock of himself and the job-hunting problem. They lay emphasis upon employer-resistance, interview technique, and the value of careful preparation for the interview. Each of the ten following chapters deals with a specific case, which is described in some detail, from edu-

educational preparation to the acquisition of the job at approximately the desired salary. In the final chapter the author anticipates possible criticisms of the reader and answers them.

Mr. Hurst is correct in his assertion that a man is a salesman when he seeks employment. The applicant endeavors to sell himself. Mr. Hurst is correct also when he emphasizes employer-resistance. Even in boom times every salesman is accustomed to encountering resistance. The type of resistance the job seeker encounters depends upon whether he uses the methods of the inside or outside salesman. Good outside salesmen are the cream of the selling profession. They create demand. They instill confidence and good will that assist them to secure business against active competition and often at higher cost. Their rewards are, as they should be, much greater than those of inside salesmen, whose main value is their ability to give good service to willing listeners who are at least somewhat predisposed to the products they offer for sale. All of the author's cases are chronicles of outside salesman.

It is a fact, however, that the majority of technically trained graduates do not possess the specialized preparation and the polished outside-salesmanship that are required of the men who so consistently secure highly remunerative employment in the pages of this book. In these cases, three thousand dollars a year is almost invariably the remuneration for the first job after graduation. While that starting rate seems fair for an unusual man who has in an unusual way prepared himself while in college for some specialized line of work, is this not overstimulation for all but the unusual graduates?

This book offers many valuable suggestions which should assist any man to sell his services to better advantage. Furthermore it has the positive force of laying a great deal of stress upon the advisability of a man's preparing himself carefully and thoroughly before he applies for employment. If it succeeds in selling this one idea to its readers, it will have justified itself.

PERSONNEL ADMINISTRATION

By Ordway Tead and Henry C. Metcalf. New York: McGraw-Hill, 1933, xiv + 519 pp., \$4.00. Third Edition

Reviewed by FRANK T. STOCKTON, *University of Kansas*

It is to be expected that any revision of the earlier editions of Tead and Metcalf would continue to present forward-looking views in the field of human relations. The third edition of their treatise brings the analysis down to date, and reads into the story of our times such lessons as pertain to enlightened managerial policies. The employer who thinks of his personnel only in terms of profit-making will find much in the volume to jar his complacency. On the other hand, any organization which wishes to harmonize its labor policies with the best thought of modern social philosophers will discover much to encourage and hearten it.

While attention has been given to all phases of personnel practices ordinarily covered in any general treatise, the authors have done at least one thing toward breaking through the barriers which have circum-

scribed the typical book in this field. Instead of confining themselves to the usual discussion of techniques, mechanics, and methods of handling one detail after another, they have given consideration to many topics normally found only in a book on labor economics. Thus they have added pertinent material dealing with unionism, a subject which other writers, for the most part, have cautiously avoided. While the work which Tead and Metcalf have done in this connection will need further development, it is refreshing to encounter their frank discussion of the place of collective bargaining in the labor picture. By such constructive enlargement of material the gap between personnel management and labor economics, as fields of study, will finally be bridged. It is in respect to this phase of their writing, as the reviewer sees

it, that the authors have made their chief contribution to the literature of the field.

The style of the volume is vigorous and effective. In certain sections one may find sound maxims as summaries of the cogent reasoning. In general there is a judicious combination of factual material and argument for things as they should be. The sermonizing of earlier editions has been largely eliminated; yet the authors are still inclined to recite the creed of employee representation and joint control at every favorable juncture.

Chapters which deserve special mention

are those on "Meeting the Industrial Risks," "The Training of Executives," "Hours and Working Periods," and "Shop Rules, Grievances, and Discharge." Minor details in personnel practice, fortunately, are given only limited attention. The treatment of some important topics, such as wage plans, rating, and turnover, seems unduly curtailed. The final section on "Joint Relations" undoubtedly could be condensed in favor of other subjects. The organization of the thirty-four chapters under nine main sections will be welcomed by those intending to use the book as a text.

LABOR PROBLEMS. By Frank Tracy Carlton. Boston: Heath, 1933, 466 pp., \$2.60.

Professor Carlton's text leads the reader to an understanding of labor problems (and to possible solution) by showing the historical background and the physical, social, and psychological forces that have evolved the type of labor organization and situation that we have today. He neither justifies nor condemns present practices. He simply analyzes them.

In order to give a proper background to problems of the present, the first part of this book is devoted to a history of the labor movement, particularly in the United States, including the rise of industrial cities and the consequent development of unions and other organizations, American Labor in politics, the migratory work, the employers' associations, coercive methods.

The fifteen chapters which follow discuss the immediate problems of industrial relations, indicate some of the changes that have already been made, and intimate what may be expected to happen through future adjustments. In this part of the book are discussed scientific management; industrial peace and the obstacles that stand in the way of its materialization; co-operation between management and men; the history, growth, and future possibilities of the shop committee; the determining of a fair wage; the work of the personnel department; the importance of the element of interest in work and how it may be developed; the acute problem of harmonizing the different groups. Then, after a chapter devoted to stabilization of employment, the book continues

the discussion with chapters on women and children in industry, labor legislation, social insurance, co-operative enterprises, immigration and population, education and industrial evolution. The final chapter sums up the points discussed and attempts the difficult task of interpreting present tendencies in the industrial and political world.

SHORTER WORK PERIODS IN INDUSTRY.

New York: National Industrial Conference Board, 1932, 56 pp., \$1.00.

This is a compact discussion (1) of various factors involved in shorter working schedules: the possible effects on employment, wages and purchasing power, production, prices, mechanization, leisure, utilization of equipment, and competition; (2) of proposed types of shorter schedules: the 5-day week, the 6-hour day, and flexible work periods; (3) of experience during the depression in spreading work, of work periods in 1932, and of guaranteed employment. The *pro* and *con* and the indeterminate and doubtful points of each issue are concisely stated.

There is no air of finality about this work, nor any dogmatic conclusions; the reader is left to form his own judgments. The study supplements admirably the earlier publications by the N. I. C. B.: *Salary and Wage Policy in the Depression* (1932), and *The Five-Day Week in Manufacturing Industries* (1929). The student of this question will also want to compare the work by Marion C. Cahill, *Shorter Hours, A Study of the Movement Since the Civil War*, reviewed in *PERSONNEL JOURNAL*, April, 1933.

APPROACHES TO PERSONALITY. By Gardner Murphy and Friedrich Jensen. New York: Coward-McCann, 1933, 427 pp., \$3.75.

The purpose of this book is explanatory. The authors seek sympathetically to understand and to describe some of the many contemporary approaches to or conceptions of personality. The diverse views presented represent movements in both psychology and psychiatry. Dr. Murphy explains the relationship of Gestalt, behavioristic, and association psychology to the problems of personality and describes quantitative studies of personality, while Dr. Jensen interprets the schools of thought known as psychoanalysis, analytical psychology, and individual psychology. The style, while not "popular," is highly readable. Dr. Murphy's portions in particular are true literature.

THE PSYCHOLOGY OF STUDY. By C. A. Mace. Robert M. McBride and Co., 1932, 96 pp., \$90.

Although brought out in an American edition, Professor Mace's book was originally published in England and with reference to the probably more mature interests of English students of higher education. It must be said that from the point of view of American usefulness there are a number of other volumes better adapted to domestic consumption in being both simpler and more comprehensive in the subject matter treated. The American reader will for example find L. A. Headly's volume, "How to Study in College," (Holt) a far more useful treatment of the same subject.

KNOWING AND HELPING PEOPLE. By Horatio W. Dresser. Boston: Beacon Press, 1933, 268 pp., \$2.50.

This book is addressed to needs in the field between psychology, religion and medicine, the prevailing motive being social service in an inclusive sense of the word. In it are found many common-sense principles of help in understanding human nature.

PERSONALITY, MANY IN ONE. By James Winfred Bridges. Boston: Stratford, 1932, 215 pp., \$2.00.

The title expresses the main viewpoint of the book—that while personality has many facets, seemingly independent of one another, it has a single plan of structure, one general configuration, which may embrace all the changing phases and interrelated aspects. The book deals with the meaning of personality and indicates the nature and course of its development. It analyzes the essential factors in intellect, character and temperament, and describes various psychological types, tracing their origin to the concurrence of nature and nurture.

THE PSYCHOLOGY OF PLEASANTNESS AND UNPLEASANTNESS. By J. G. Beebe-Center. New York: Van Nostrand, 1932, 427 pp.

This book discusses the foundations of our likes and dislikes. Experimental psychology has investigated the nature of pleasant and unpleasant experiences over a period of fifty years. The knowledge gained in the laboratory through this study has made possible the rapid and valuable development of the measurement of interests. The assembled pleasant and unpleasant feelings in a field of stimulation (an occupation or social group) is the measure of our interests in that field. Beebe-Center has traced the experimental study of pleasant and unpleasant feelings throughout its history in the psychological laboratory and he presents the results in systematic form as they relate to methods of experimentation, analysis into mental units and the relation of feeling to other psychological qualities. This is the first book of its kind in English and it is a valuable addition to the library of the research worker in applied psychology who is concerned with the feeling life of the worker.

SOCIAL PATHOLOGY. By J. L. Gillin. New York: Century, 1933, 612 pp., \$3.75.

This is a systematic portrayal of the world's social maladjustments, fitted into a framework of sociological theory. The author divides his subject into five parts: pathology of the individual, pathology of domestic relationships, pathology of social organization, the breakdown of economic relationships, pathology of cultural relations.

The section on pathology in the economic realm will probably be of greatest interest to readers of the *Personnel Journal*. The author presents a great mass of well integrated factual material bearing on unemployment, child labor, sweatshops, poverty and dependency, and the inequitable distribution of wealth.

Six hundred pages devoted almost entirely to description of the nature and origins of mankind's lack of sense may make morbid reading for some; but it also makes interesting and provocative reading.

PROBLEMS OF EDUCATION IN THE UNITED STATES. By Charles H. Judd. New York: McGraw-Hill, 1933, 214 pp., \$2.50.

This is one of the monographs which offers supporting evidence for the chapter on education in "Recent Social Trends in the United States." The large aim has been distinctly factual with a minimum of interpretation. And within the compass of a short study Professor Judd, as the most eminent authority on this subject, has been able to compress a vast amount of his experience and wisdom. Everyone who wants to be brought quickly up-to-date with the most salient problems of education in this country will find them here excellently set forth as part of a total comprehensive picture.

Perhaps one of the most significant conclusions of this exceedingly useful volume is the following paragraph, (page 87):

"There is no more urgent problem con-

fronting the educational system of the United States than that of reorganizing the curriculums of all schools so that the chief contribution of these curriculums to the experiences of young people will be a fuller understanding of society and its institutions. It is evident from the history of the present economic crisis that the people of this country are so ignorant about the forces which influence their industrial, political, and social lives that they are unable to reap the advantages which would come in an intelligently organized society from the technical arts and the natural sciences."

POPULATION TRENDS IN THE UNITED STATES.

By Warren S. Thompson and P. K. Whelpton. New York: McGraw-Hill, 1933, 415 pp., \$4.00.

Population Trends in the United States is one of a series of monographs published under the direction of the President's Committee on Social Trends. It presents material in greater detail than was possible in the Committee's summary report, "Recent Social Trends in the United States." It is a vast compilation of fundamental fact and interpretation, dealing with the many aspects of our shifting population. Growth is traced from 1610 to the present and projected into the future up to 1980, at which time the population will exceed 155 million, according to well worked-out estimates. Age, sex, racial, and marital composition, as well as birth rate, are examined.

New Books

A BIBLIOGRAPHY OF MENTAL TESTS AND RATING SCALES. By Gertrude H. Hildreth. New York: Psychological Corp., 1933, 242 pp., \$3.00.

THE BOOK OF OPPORTUNITIES: A DICTIONARY OF JOBS. By Rutherford Hayes Platt. New York: Putnam, 1933, 488 pp., \$3.00.

CAREERS AHEAD. By Joseph Cottler and Harold Brecht. Boston: Little, Brown, 1933, 312 pp., \$2.50.

GENERAL PSYCHOLOGY. By Gardner Murphy. New York: Harpers, 1933, 667 pp., \$2.75.

GENETIC PSYCHOLOGY. By A. R. Gilliland. New York: Ronald Press, 1933, 364 pp., \$3.25.

THE GIRL AND HER JOB: A HANDBOOK FOR BEGINNERS. By Esther E. Brooke. New York: Appleton, 1933, 139 pp., \$1.00.

INDUSTRIAL DISCIPLINE AND THE GOVERNMENTAL ARTS. By Rexford G. Tugwell. New York: Columbia Univ. Press, 1933, 241 pp., \$2.50.

MEASUREMENT AND GUIDANCE OF COLLEGE STUDENTS. By American Council on Education, Central Committee on Person-

- nel Methods. Baltimore: William & Wilkins, 1933, 210 pp., \$2.00.
- THE PROGRAM FOR THE WORLD ECONOMIC CONFERENCE: THE EXPERTS' AGENDA AND OTHER DOCUMENTS. By James W. Angell. Boston: World Peace Found., 1933, 98 pp., \$1.00.
- PSYCHOLOGY: AN EMPIRICAL STUDY OF BEHAVIOR. By Frederick H. Lund. New York: Ronald Press, 1933, 491 pp., \$3.00.
- SEVEN PSYCHOLOGIES. By Edna Heidbreder. New York: Century, 1933, 458 pp., \$3.00.
- SOCIAL STATISTICS. By R. Clyde White. New York: Harper, 1933, 495 pp., \$4.00.
- STATISTICAL PROCEDURE OF PUBLIC EMPLOYMENT OFFICES. By Annabel M. Stewart and Bryce M. Stewart. New York: Russell Sage Found., 1933, 327 pp., \$2.50.
- TEN THOUSAND OUT OF WORK. By Ewan Clague and Webster Powell. Philadelphia: Univ. of Pa. Press, 1933, 205 pp., \$2.00.
- THE UNITED STATES EMPLOYMENT SERVICE. By Ruth M. Kellogg. Chicago: Univ. of Chic. Press, 1933, 206 pp., \$1.00.
- VOCATIONAL GUIDANCE IN ENGINEERING LINES. By American Assn. of Engineers. Easton, Pa.: Mack Pr. Co., 1933, 555 pp., \$2.50.

Current Periodicals

PREPARED BY LINDA H. MORLEY, *Industrial Relations Counselors, Inc.*

ABILITY TESTS

KINGSBURY, FORREST A. (Associate Professor of Psychology, University of Chicago). Psychological tests for executives. *Personnel*, May 1933, vol. 9, p. 121-130.

Suggests the tests which may be used to select executives to determine whether or not they have the essential traits of a good executive. The qualifications thought necessary are: (1) a wide understanding of his own business and related fields, and a good grade of intelligence; (2) the ability to direct the execution of plans, evaluate abilities and motives in others, etc.; (3) a "social aptitude," an interest in and understanding of people; and (4) dynamic qualities such as decisiveness, persistence, etc.

BUDGETS AND COST OF LIVING

National Industrial Conference Board, Inc. Cost of living in the United States in 1932. *Conference Board Service Letter, Supplement*, Mar. 1933, p. 1-8.

This supplement takes the place of the usual annual volume. Wage earners' living costs fell nearly 10 per cent during 1932; food prices fell 13.6 per cent; rents 14 per cent and clothing 14 per cent. On the basis of the combined changes in the cost of living, the purchasing value of the wage earner's dollar was 133.2 cents at the close of 1932, as compared with 120.3 in December 1931, 99.9 cents in December 1929, and 161.3 cents in July, 1914.

Gives monthly index numbers for cost of living in U. S., divided by food, housing, clothing, fuel, gas and electricity. Index numbers for rent, coal, gas and electricity and rates of carfare are given for 95, 174 and 275 cities respectively as of specified dates in 1932.

ECONOMICS

FISHER, IRVING (Yale University). Statistics in the service of economics. *Journal of the American Statistical Association*, Mar. 1933, vol. 28, p. 1-13.

Believes that the application of laws verified by facts can be found at least partially as effective in the realm of economics as they are now in the scientific world, where, for example, astronomical predictions are based exclusively on facts, and are invariably accurate.

Traces the trend in methodology and viewpoint in economic forecasting during his own professional experience.

MILLS, FREDERICK C. Changes in physical production, industrial productivity and manufacturing costs, 1927-1932. *National Bureau of Economic Research Bulletin*, Feb. 20, 1933, no. 45, p. 1-6.

"Drastic decline in the total volume of physical goods produced, a sharp increase in average industrial productivity per man-hour as less efficient plants and machines were stopped, a drop in the selling prices of manufactured goods which lags behind the general fall of wholesale prices, a reduction of labor costs per unit of manufactured product and a decline in the costs of the services of capital and management in manufacturing industries—these are notable features of the period of the business depression . . ." Index numbers from 1927 (100) to 1932 are given for the above and other factors.

EMPLOYEE ATTITUDES

DATALLER, ROGER. Worker's point of view: Chap. XIV, the problem of allegiance. *Human Factor*, May 1933, vol. 7, p. 181-185.

Gives several incidents to show the effect on the morale of workers when an

impersonal "Board" is substituted for the old type owner who daily contacted with his employees, and was often even on friendly terms with many of them. Believes a personal contact is necessary to produce harmony between directors and those directed in any industrial organization.

KORNHAUSER, ARTHUR W. (Associate Professor of Psychology, University of Chicago). Technique of measuring employee attitudes. *Personnel*, May 1933, vol. 9, p. 99-107.

Considers the knowledge of employee attitudes part of the responsibility of management, and that "special attitude studies and measurement techniques are aids in the performance of this task." Dr. Kornhauser also believes that "employee attitude studies for practical purposes should always depend less on formal measurements than on informal, more realistic interview and question-blank methods."

Five different techniques for discovering employee attitudes are explained. Discussion of the paper is reported also.

EMPLOYMENT CONDITIONS

National Industrial Conference Board, Inc. Employment and labor conditions in 1932. *Conference Board Service Letter*, Apr. 30, 1933, vol. 6, p. 25-29.

Tables and charts give statistics on employment, average hours of work per week and weekly earnings in the different industries. The average hours are given not only for the last quarter of 1932, but an average for 1920-1929. In addition, index numbers show employment, hours of work, and man-hours in manufacturing industries, quarterly, 1930-1932, while other charts give average weekly and average hourly earnings for the same period.

The average weekly earnings at the end of 1932 were 59.5 per cent of the 1929 level. In comparison with the 1929 real weekly earnings, it was found that at the end of 1932 they were only 77.4 per cent of the 1929 level. Hourly earnings decreased in 1932 from 52.6 cents to 46.9 cents per hour. The average actual hours worked per week in manufacturing establishments in 1929 were 48.4, while in the third quarter of

1932 they had fallen to 33.2 hours. In manufacturing industries employment declined 8.8 per cent during 1932; although during the last quarter of 1932 there was an improvement in employment, hours and weekly earnings.

EMPLOYMENT EXCHANGES

KELLOGG, RUTH M. Standards of service for a public employment office. *American Federationist*, Feb. 1933, vol. 40, p. 145-148.

Believes the applicant has a right to expect that the location and equipment of the office and the treatment he receives by the personnel shall be "of the kind to help him keep his sense of self-respect." Privacy for interviewing; comfortable waiting facilities; workers who have accurate knowledge of the trades and industries, labor laws, wage rates, etc.; and the ability to obtain information on job possibilities elsewhere, are a few of the points which are discussed in some detail.

FATIGUE

DILL, D. B. (Assistant Professor of Biological Chemistry, Harvard University). Nature of fatigue. *Personnel*, May 1933, vol. 9, p. 113-116.

Explains how supply of fuel and supply of oxygen and dissipation of heat, may be limiting factors in a man's capacity for work. Believes "fatigue" is a word used conveniently to explain a variety of phenomena and that the usual factory worker rarely exhibits fatigue from any of these causes because his output is ordinarily only a small fraction of his capacity.

HOURS OF WORK

CHENEY, ALICE S. International conference on reduction of hours of work. *American Federationist*, May 1933, vol. 40, p. 501-505.

Results of discussion carried on by the delegates to the Preparatory Technical Conference on the Shorter Work-day, held in Geneva, January 10-20, 1933, under the direction of the International Labor Organization. The main conclusions were that reduction of hours would

contribute to reduction of unemployment; that some agreement between countries to reduce hours was desirable, and in the method of reduction some thought should be given to maintenance of standard of living of the wage earners.

INCENTIVES IN OFFICE WORK

BASS, A. W. Financial incentives for clerical service. *N. A. C. A. Bulletin*, Apr. 1, 1933, vol. 15, sec. 1, p. 1115-1127. (Abstract in *Management Review*, May 1933, vol. 22, p. 144.)

Describes methods used by the Westinghouse Electric and Manufacturing Company in measuring the work of several hundred office employees. Believes that for 80 per cent of clerical workers standard measurements can be secured and wage incentive plans installed.

INTERNATIONAL LABOUR ORGANIZATION

International Labour Organization. *Annals of the American Academy of Political and Social Science*, Mar. 1933, vol. 166, entire issue.

A special number containing articles by 21 experts on the origin and nature of the I. L. O., its work in international relations and its contributions to current economic programs. The relation of the organization to the United States is emphasized.

LEISURE

Russel Sage Foundation Library. New leisure, its significance and use: a selected bibliography, compiled by Grace P. Thornton. *Bulletin of the Russell Sage Foundation Library*, Feb. 1933, no. 117, p. 1-4.

References to books and periodicals, partly annotated, on the use of leisure. Includes section on "Hobbies."

MACHINERY IN INDUSTRY

BOUNIATIAN, MENTOR (Professor in the Russian Institute of Law and Economics, University of Paris). Technical progress and unemployment. *International Labour Review*, Mar. 1933, vol. 27, p. 327-348.

Presentation of the theory that technical improvements, instead of causing over-

production and unemployment, can help toward a revival of economic activity, because they reduce costs of production and thus lower prices and increase consumption. Discusses in some detail the objections to the theory of equilibrium and criticisms of these objections.

PSYCHOLOGY

FELIX, J. W. Industrial psychology applied to the sales force. *Human Factor*, Apr. 1933, vol. 7, p. 132-138.

A substantial increase in number of sales resulted from methods adopted by an English manufacturing company. These included: replacing standardized sales instructions by letters which were written to each salesman personally, taking into consideration his own individuality and his own sales problems; advice was sought from the salesmen on the development of any "new line;" a Policy Manual was drafted, which listed the policies of the firm; method of handling complaints was standardized, every complaint being dealt with at headquarters; and a weekly sales bulletin was circulated to give news and encouragement.

RESEARCH

Social Science Research Council. Committee on Social Science Personnel. Training for research in the social sciences. *Educational Record*, Apr. 1933, vol. 14, p. 152-161.

Suggests that university administrations and other organizations interested in the furtherance of social research consider a "possible means for the development of graduate school regulations and procedures conducive to better research training in the social sciences," and a "provision of funds for financing advanced graduate study, travel and field work." Adoption of selective standards of admission, development of devices for weeding out mediocre material at the first year graduate level; trend away from required course work; flexible adaptation of regulations to individual needs; and "Inter-discipline" fields of concentration for the Ph.D. are suggested methods.

SALARIES

CASE, E. P. Salary reduction and readjustment. *N. A. C. A. Bulletin*, Apr. 1, 1933, vol. 15, sec. 1, p. 1147-1155. (Abstract in *Management Review*, May 1933, vol. 22, p. 142.)

Outlines the principles of an emergency plan for equitable salary reductions, as well as an equitable increase in rates when business warrants it.

DOOLEY, C. R. (Personnel Manager, Socony-Vacuum Corporation) Executive salary administration. *Personnel*, May 1933, vol. 9, p. 133-135.

After evaluating the executive positions with reference to rank, duties, responsibilities, etc., determined by job analysis, it is suggested that group salary limits be set, taking into consideration the years of service, special qualifications and circumstances for the different individuals, but keeping in mind that no salary may exceed maximum limit set for that group.

SOCIAL INSURANCE

KLUMPAR, DR. V. (Director of the Central Social Insurance Institution, Prague). Investment of social insurance funds. *International Labour Review*, Jan. 1933, vol. 27, p. 51-65.

Survey of the provisions in force in Germany, Austria, Great Britain, Sweden, Italy, Czechoslovakia, Hungary and France on the investment policies of these funds.

MERIAM, R. S. (Graduate School of Business Administration, Harvard University). Unemployment reserves: some questions of principle. *Quarterly Journal of Economics*, Feb. 1933, vol. 47, p. 312-336.

An analysis of the economic theory of unemployment reserves as a result of which the following propositions are stated: the burden of employers' contributions is shifted backward to the workmen; the wisdom of contributions from employers and workmen is a question of expediency, not of ethical standards; contributions from employers add little to existing incentives to stabilization; the technical

requirements for added incentives—prohibition of casual employment and liability limited to workmen dismissed—will probably not secure widespread adoption; unemployment is not an insurable risk; unemployment reserves on a pooled or "insurance" basis are mixtures of insurance and relief, which are as unstable as employment itself; unemployment reserves on a savings basis require extension to include retirement as well as unemployment.

National Industrial Alliance. Pensions Sub-Committee. Pensions for all; report of the pension sub-committee set up by the National Industrial Alliance. *Unity*, Feb.; Mar.; Apr.; May, 1933, vol. 11, p. 179-182; 193-194; 207-210; 232, 234.

Extracts from an English report on industrial pensions for wage earners, recommends the following principles to be followed in the adoption of a pension plan: that the scheme should preferably be operated through an insurance company; that it should be on a contributory basis, the contributions not to exceed one shilling per week per employee from each side, and that it should aim at securing for each employee within the scheme a minimum pension of one pound per annum for each completed year of service.

SLICHTER, SUMNER H. (Professor of Business Economics, Harvard University). Making booms bear the burden of relief—some financial implications of unemployment reserves. *Harvard Business Review*, Apr. 1933, vol. 11, p. 327-335.

Believes unemployment reserves set up by contributions from employers might have some tendency to accentuate inflation and deflation, but that proper financial administration by the Federal Reserve Bank, expanding its open market sales and purchases, would moderate these effects, and that the accumulation of reserves would "reduce inflation in times of boom, and that their disbursement would increase the total volume of purchasing power . . . when unemployment is greatest and national income the lowest."

Item Analysis

The Basis for Constructing a Test for Forecasting Supervisory Ability¹

By R. S. UHRBROCK, *The Procter & Gamble Company, Ivorydale, Ohio*, AND
M. W. RICHARDSON, *University of Chicago, Chicago, Illinois*

This study indicates one of the reasons why industrial testing programs have failed in the past. Unanalyzed tests may contain as much as ninety per cent "dead wood" so far as a particular industrial problem is concerned. The value of item analysis, whereby 85 significant test items were isolated out of a battery of 820 items, is shown. A technique for building a criterion based upon Order of Merit, Paired Comparison, and Graphic Ratings is discussed. The correlation of $+49 \pm .04$, between the criterion and total score on 400 items, obtained after four hours of testing, was raised to $+71 \pm .03$ when only the scores on the 85 significant items were used.

NINE tests were presented to 163 supervisors who were responsible for the direction of the work of 2100 factory workers in a large industrial organization. The tests consisted of:

- (1) Modified Army Alpha (Bureau Test VI)
- (2) Strong's Vocational Interest Blank
- (3) McCall's Multi-Mental Test, Form A
- (4) Minnesota Paper Form Board Test, Series A
- (5) Minnesota Paper Form Board Test, Series B
- (6) Selected items from Thurstone's Personality Schedule

¹ Since the completion of this study 300 supervisors have been tested in 10 widely separated factories by means of a 250 item test. The new test contains all of the items that were found to be valid as a result of the first study, plus others introduced for research purposes. The validity of each item is being investigated.

- (7) Multiple-Choice Company Information Test
- (8) True-False Company Information Test
- (9) Completion Form, Company Information Test

Eight hundred and twenty items were submitted to the supervisors in two test periods of two hours each, during which a personal history record was filled out by each supervisor. A thorough medical examination was given each man at a later date.

Tentative answers were sought to three main questions:

1. What are the personal history facts of "best" supervisors that will distinguish them from "poor" supervisors? Are there significant differences in age, schooling, marital status, home ownership, etc.?
2. Are there significant differences in the responses of "best" and "poorest" supervisors to the test material submitted to them?

3. Are there significant differences in physical fitness between the two groups, as indicated by medical examinations?

I. CRITERION

Developing the criterion lists. Ratings were obtained from superintendents (immediate superiors of the supervisors) by three methods: (a) Order of Merit; (b) Paired Comparison; and (c) Graphic Rating Scale. Each supervisor was rated by four superintendents by this method. Thus, a total of twelve judgments on each of the 163 supervisors was available in constructing the master criterion used in validating data in this study.

We were confronted with the fact that no rater knew every supervisor in the group. The following method was used in preparing lists of names of supervisors to be rated:

1. The complete list of names of 163 supervisors was submitted to the twenty-three men who were to act as judges.
2. The judges were asked to check the names of all the supervisors whom they knew well enough to rate on "supervisory ability," which had been defined as "handling men and getting out the work."
3. A composite check list was prepared showing the names of the judges and the supervisors they were willing to rate. Each supervisor's name was indicated by at least four judges. Five supervisors were known to every judge.
4. A list of forty-five names of supervisors was prepared for each judge, although some of the judges had indicated the names of more than forty-five supervisors. The name of each individual supervisor appeared on four lists. Conse-

quently, each supervisor was rated by four judges. The names of the five men known to all of the judges were included in every rater's list. Later, these "key men" served an important function in making it possible to equate the ratings of different judges when the master criterion list was completed.

Order of merit ratings. The names of the forty-five supervisors to be rated by each judge were typed on library cards, cut to half size. One name was typed on each card. The judges sorted the cards, and arranged them in rank order in terms of present proficiency in the job of supervisor. The dominating direction was, "All things considered, rank the names of these men according to their abilities as shown in the handling of their present positions." When the judge had finished his ranking, the cards were numbered from 1 to 45, placed in an envelope with the name of the rater, and sealed for later tabulation.

Paired comparison rating. The Paired Comparison method is perhaps the most simple and direct way of rating men, from the standpoint of the judge. The use of this technique in January 1931 is, as far as we know, its first application to an industrial rating situation. The judge is simply asked to make a choice between two men whose names are presented together, with respect to their comparative effectiveness as supervisors. All possible pairs of men may be used, but in practice it is desirable to reduce the total number of pairs (judgments). In this case, we did not wish to impose too much upon the good will of the judges. Hence, a device was adopted which reduced the 990 judgments

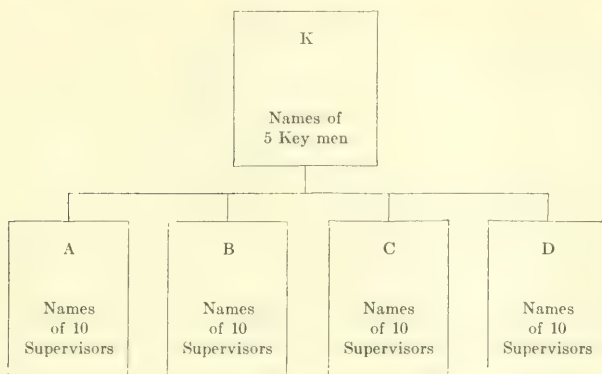


FIG. 1. METHOD OF PAIRING NAMES

required of each judge to 390. The details of this device are indicated in figure 1.

A list of forty-five names was broken into four groups of ten each and one group composed of the five key men. Pairs were made as follows:

	<i>Number of pairs</i>
Group A. $[10 \times (10 - 1)/2]$ (each man with every other).....	45
Group B. $[10 \times (10 - 1)/2]$ (each man with every other).....	45
Group C. $[10 \times (10 - 1)/2]$ (each man with every other).....	45
Group D. $[10 \times (10 - 1)/2]$ (each man with every other).....	45
Group K. $[5 \times (5 - 1)/2]$ (each man with every other).....	10
Each man in A with each in K....	50
Each man in B with each in K....	50
Each man in C with each in K....	50
Each man in D with each in K....	50
	<hr/> 390

comparison method. A simple tabular form based on the groups above was used to facilitate the preparation of the lists for each rater. Alphabetic arrangement was avoided; instead, a systematically scrambled order of pairs was used. Each man's name was presented first in half of the pairs. The pairs involving the five key men were distributed throughout the list. In fact, no judge knew that the device of key men was being used.

Graphic rating scale. A *Rating Scale for Supervisory Employees* was constructed. Ratings were obtained on ten characteristics which may be described in the following general terms: (a) flexibility, (b) possibilities for future growth, (c) quality in work output, (d) quantity of work, (e) training, (f) planning ability, (g) analytical ability, (h) leadership, (i) coöperativeness, (j) teaching ability.

This device resulted in a 60 per cent reduction in the time required by judges to rate the men by the paired

The three sets of ratings were obtained independently from each judge. The Order of Merit ratings were

obtained before the Paired Comparison lists were presented. The Graphic Rating Scale was presented last. It is doubtful if judges kept lists of their ratings. When one set of ratings was completed they were not informed that a different rating plan would be presented later. Even if they did retain copies of previous ratings the nature of the three methods would have made it extremely difficult to employ records of former ratings in any effort to give uniform results. We have every reason to believe that independent judgments were expressed during the rating of the supervisors.

In order to combine the Paired Comparison Ratings and the Graphic Rating Scale results with those obtained by means of the Order of Merit method, it was necessary to reduce all of the ratings to a comparable basis; i.e., to cast them into the same linear scale based on rank order, from best to poorest.² The scores of the five key men (on the linear scale adopted) served as a nucleus of reference for correcting all scores to the same average, since it should not be assumed that all groups of 45 men were, on the average, equal with respect to effectiveness as supervisors. Hence, all scores were corrected up or down to tie in with the stable average of the five key men for whom there were many ratings. This procedure tended to correct a usual source of error in combining ratings made by different judges. Each judge's ratings were considered to be of equal value. Since each of the 163 supervisors was rated

by four judges, by means of three different rating techniques, his final score was the average of twelve separate judgments. These final criterion, or success, scores were available for purposes of validating personal history data, test items, and medical examination results.

A severe test of the reliability of the final criterion as a whole was made by dividing the rating data into two parts with half the judges in each. The (uncorrected) Pearson r for the two halves of the rating measures was $.80 \pm .02$.

The correlations between the final rankings obtained by means of the three rating methods were as follows:

Order of Merit and Paired Comparison.....	$+.93 \pm .01$
Order of Merit and Graphic Rating Scale.....	$+.86 \pm .01$
Paired Comparison and Graphic Rating Scale...	$+.84 \pm .02$

II. PERSONAL HISTORY DATA

The following fifteen personal history items were studied:

1. Age
2. Years of schooling
3. Ancestry
4. Marital status
5. Housing (owner, renter, boarder)
6. Place of birth
7. Number of dependents
8. Membership in organizations
9. Type of recreation enjoyed
10. Ability to read blue prints
11. Business for self
12. Previous experience before present connection
13. Length of service with present employer
14. Experience as a supervisor
15. Military service and rank attained

² Hull, C. L. *Aptitude Testing*. Yonkers-on-Hudson, New York: World Book Company, 1928. p. 492.

The measures of success as supervisors were the ratings made by superiors. In the comparisons to follow, the supervisors were divided into three groups: the upper 48 men; the middle 68 men; and the lower 47 men. These groups are referred to as "High Rating," "Medium Rating," and "Low Rating."

The validity of each test item, personal history fact, and each com-

error of difference computed by the formula:

$$\sigma(p_1 - p_2) = \sqrt{\frac{p_1 q_1}{N_1} + \frac{p_2 q_2}{N_2}}$$

A facilitating table was constructed for the latter. A difference equal to at least three times the standard error was required for acceptance. Only four of the fifteen personal history items studied were significant in differentiating between the 30 per cent of supervisors in the "Low Rating" group and those in the "Medium" and "High" groups. These were: Years of schooling, Ability to read blue prints,³ Age, and Military service and rank attained.

Table 1 shows the relationship between years of schooling and ratings of 163 factory supervisors.

It is to be noted that as one goes up the scale of success as supervisor there is a steadily decreasing percentage of men whose schooling stopped within the elementary school level. At the same time the percentage of those with some high school and of those with some college training steadily increases. There is a significant difference in the probability of success of supervisors with nine or more years of schooling as contrasted with those of eight years or less. It should be noted that the advantage of college training over high school training is inconsiderable, as measured by these ratings of success as supervisors.

Chart 1 shows the distribution of ratings for the three main schooling groups.

³ The question was asked, "Can you read blue prints?" No test to measure blue print reading proficiency was given.

TABLE 1

Showing relation between schooling and rating of ability as supervisors

RATING	PER CENT			Total
	8 years or less	9 to 12 years	13 years and more	
High.....	26	36	38	100
Medium.....	32	32	36	100
Low.....	64	19	17	100

TABLE 2

Relation between ability to read blue prints and rating of ability as supervisors

RATING	PER CENT ANSWERING "YES"	PER CENT ANSWERING "NO"	TOTAL
High.....	83	17	100
Medium.....	71	29	100
Low.....	36	64	100

ponent of the medical examination was checked by the following procedure. For each item the percentage of men in each of the three groups passing the item was computed. This was facilitated by means of Hollerith cards on which criterion and all item responses were punched. The difference in percentages passed by upper and lower groups was found, and the standard

The supervisor who states that he can read blue prints is almost twice as likely to be rated in the upper two success groups as one who answers the question in the negative. Table 2 shows the relation between ability

potent factor in deciding the degree of success as a supervisor.

Table 3 shows the percentages of those in each success group who were 20 to 24 years old, 25 to 39 years old, and 40 years or older.

DISTRIBUTION OF RATINGS FOR THREE SCHOOLING GROUPS

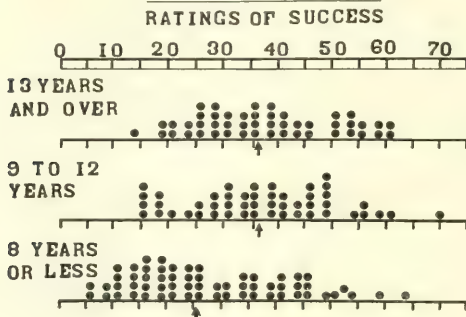


CHART 1

to read blue prints, as indicated by an answer to a direct question, and ratings of success as supervisors.

The age range 25 to 39 years is distinctly favorable. The low ratings of very young supervisors are to be explained, partly, by the short time they have been with the Company.

TABLE 3

Age and rating as supervisors

RATING	PER CENT			Total
	20-24 years	25-39 years	40 years and over	
High.....	0.0	75	25	100
Medium.....	16	52	32	100
Low.....	9	42	49	100

It is quite possible that self-confidence plays a part in determining the answer to this question regarding blue print reading ability, and that it is a

TABLE 4

Relation between military service and rating of ability as supervisors

RATING	PER CENT			Total
	No military service	Service as private	Non-commissioned or commissioned officers	
High.....	51	21	28	100
Medium.....	69	19	12	100
Low.....	81	17	2	100

Military service and rank attained are favorable to success as supervisors. This may not be true in future groups who may not be exposed to military training. Table 4 shows the relation between military service and ratings as supervisors. Forty-nine per cent of the high rating supervisors, 31 per cent of the medium group, and 19 per cent of the low group reported military service. These data are affected, to a considerable extent, by the age factor and have only temporary validity.

A count of the number of times a man's personal history record falls in the favorable ranges on the four significant items (schooling, reading blue prints, age, military service) yields the following results.

<i>Number of times in favorable range of four items</i>	<i>Percentage of prob- ability of average or superior success as supervisor</i>
0	28
1	59
2	70
3	87
4	91

The chances are 91 out of a hundred of being rated medium or high as a supervisor if a man has had 9 or more years of schooling, states that he is able to read blue prints, is between 25 and 39 years of age, and has had some military service. These represent the most favorable combination of personal history items out of the fifteen that were studied so far as 163 supervisors are concerned.

The essential details for the remaining personal history items are given for any reference value they may have. Since they were not predictive of success, in this particular group of supervisors, separate tabulations for high,

medium, and low groups are not given.

1. The ancestry of 44.2 per cent of the group of supervisors was German. The remainder were chiefly English, Irish, Scotch, and "American."
2. Eighty-two and eight-tenths per cent of the supervisors were married. Contrary to popular belief, no statistically significant differences were discovered in the ratings of married and single men.
3. Forty-four and two-tenths per cent owned their own homes.
4. Sixty-two and one-tenth per cent were born in Ohio; 77.4 per cent of the supervisors were born in Ohio, Indiana, or Kentucky.
5. Only 13 per cent of the supervisors stated that they were without dependents; 30.7 per cent had one dependent.
6. Forty and five-tenths per cent of the supervisors stated that they belonged to no organizations; 36.2 per cent belonged to one organization, and 20 per cent belonged to two.
7. Fifty-three and four-tenths per cent listed some form of social recreation, such as bowling, "horse shoes," chess, cards, etc.; 46.6 per cent reported solitary recreations, such as growing roses, constructing radios, photography, etc.
8. Only 14.1 per cent of these men had ever been in business for themselves at any time in their careers.
9. The average supervisor had had 6.4 years previous experience outside of his present employment.
10. His length of service with the company, at the time the data were gathered, was 11.2 years.
11. The average supervisor in the group had been a supervisor for 6.3 years.

III. ANALYSIS OF PSYCHOLOGICAL AND EDUCATIONAL TEST ITEMS

The nine psychological and educational tests administered to the 163

supervisors were selected to measure mental alertness, company information, interest, and mechanical aptitude. The available tests, with the exception of those specially constructed to measure company information, were prepared in university laboratories and represent collections of items designed to sample a wide range of experience and ability. For a given occupation, in a specific company, any test now on the market undoubtedly will contain a great amount of "dead wood." The problem, then, was to expose the group of supervisors to a large battery of test items, and to study the results, *item by item*, in order to eliminate the dead wood, and to retain only the items that would aid in predicting success as a supervisor. Then, a new test could be constructed for the future selection of supervisors, whose characteristics are like those of the best of the present group. It will be recalled that the supervisors were divided on the basis of their ratings into high, medium, and low success groups of 48, 68, and 47 men respectively. A test item, in order to be considered valid, must be answered correctly by a significantly greater proportion of men in the medium and high groups as contrasted with the results obtained from the men in the low success group. Moreover, the difference must be so great that it could not be explained by chance. As stated above, a difference equal to at least three times the standard error was required for acceptance.

Out of 820 items that were subjected to statistical analysis, only 85 discriminated sufficiently between the

low group and the two upper groups of supervisors to be retained for future test purposes. In other words, only 10.4 per cent of the items were valid according to the criterion of selection of items that was used.

Examples of "good" and "worthless" items. Chart 2 shows a "picture" of two items that do some work in discriminating between poor and good supervisors and an item that was of no use whatsoever, so far as predicting supervisory success was concerned. Item No. 48 in the Bureau Test VI (Clerical Booklet) read as follows:

F. O. B. is an abbreviation of the words:

- () Freight only Billed
- () Free on Board
- () Favor of Buyer
- () Fill out Blanks

This item was answered correctly by 30 per cent of the low supervisors, 52 per cent of the medium supervisors, and 79 per cent of the high supervisors. The standard error was $\pm .09$. The correlation item on criterion was $+.37$. Difficulty (P) equalled $.53$. This item fulfilled all of the requirements for selection as a "good" item. The most important phase of the problem was to sift and analyze the 820 items in order to isolate just as many "good" items as possible.

Item No. 53 in the Bureau Test VI read as follows: "How many hours will it take a truck to go 42 miles at the rate of 3 miles an hour?" This item appeared originally in the Army Alpha, Form 8, Test 2. During the war and since 1919 it probably has been answered by several hundred thousand men. In our study of supervisors it did not discriminate

between low, medium, and high rating men. This item was answered correctly by 84 per cent of the low supervisors, 90 per cent of the medium supervisors, and 87 per cent of the high supervisors. For our purposes, in

great difficulty, read as follows: "A rectangular bin holds 200 cubic feet of lime. If the bin is 10 feet long and 5 feet wide, how deep is it?" Only 47 per cent of the high supervisors answered that item correctly.

EXAMPLES OF "GOOD" AND "WORTHLESS" ITEMS

A-HOW MANY HOURS WILL IT TAKE A TRUCK TO GO 42 MILES AT THE RATE OF 3 MILES AN HOUR?

B-F.O.B. IS AN ABBREVIATION OF THE WORDS:

- [] FREIGHT ONLY BILLED
- [] FREE ON BOARD
- [] FAVOR OF BUYER
- [] FILL OUT BLANKS

C-A RECTANGULAR BIN HOLDS 200 CUBIC FEET OF LIME. IF THE BIN IS 10 FEET LONG AND 5 FEET WIDE, HOW DEEP IS IT?

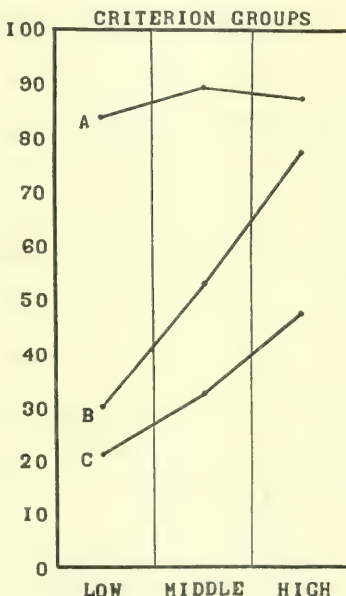


CHART 2

preparing a test for the future selection of supervisors, it readily can be seen that this arithmetic item would not be worth the time that it would take to answer and score it.

A third "good" item, apparently of

IV. REPRESENTATIVE SAMPLE OF VALID ITEMS

Table 5 presents a representative sample of the types of items that were found to be valid in differentiating

between lower and upper rating supervisors.

Difficult test forms yielded more valid items than easy test forms. The tendency of the more difficult items to stand up under analysis is, of course, a function of the intrinsic difficulty of the material as applied to

This last finding lends confirmation to the belief that psychological testing, if it is to be successful in an industrial situation, must proceed along the lines of item analysis of test material in which specially prepared company information data play a leading part. The presence of approximately ninety

TABLE 5
Relative difficulty of test items

TEST ITEM	PERCENTAGE OF SUPERVISORS ANSWERING CORRECTLY		
	Low	Medium	High
A rectangular bin holds 200 cubic feet of lime. If the bin is 10 feet long, and 5 feet wide, how deep is it?.....	21	32	47
Complete the series by adding two more numbers. 5 9 13 17 21 25 — —.....	53	82	88
"Eventually—Why not now?" is an advertisement of a tobacco, flour, baking powder, automobile..	40	64	77
Tropics is in the produced rubber. True—False...	36	67	68
Enormous—gigantic (same—opposite).....	38	77	79
Of the twelve men on the Board of Directors, the number of Employee Representatives is: —One —Two —Three —One from each factory.....	20	26	47
Under the Guarantee of Employment Plan, the employee is guaranteed a minimum of forty-eight weeks employment in each calendar year. (True—False).....	65	94	94
Profit Sharing Dividends will be paid or credited by the Company quarterly on the amount of the employee's wages received by him during this period at the rate of — per cent. (Dividends are not paid on earnings in excess of \$2000 per year.)..	46	73	70
Are you in general self-confident about your abilities? Yes () No ().....	68	90	94

this group. It is suitable difficulty, and not difficulty *per se*, that is the determining factor in validity. Also, company information material, specially prepared for the purposes of this study, showed a greater proportion of valid items than purchased tests.

per cent dead wood among the items analyzed in this study suggests a possible explanation for the failure of certain industrial testing programs during the past decade.

The essential value of the item analysis technique is emphasized by the fact that the correlation between

the criterion and the total score on all of the tests used in this study (with the exception of Strong's Vocational Interest Blank) was only $+.49 \pm .04$. After all of the items were analyzed, a total score was computed for each supervisor, based solely upon his responses to the 85 significant items. The correlation between the criterion and the total score on the significant items was $+.71 \pm .03$. The elimination of dead wood in the tests and the retention of the significant items improved the validity coefficient appreciably. A perfect selection device would not only predict whether a man would succeed or fail but would rank men in order from most efficient to least efficient. This degree of refinement is now neither necessary nor possible. The *Test for the Selection of Supervisors*, which has been constructed as a result of this study, will have definite value in selecting men for promotion from the ranks. Its effectiveness is better than that of the unaided interview.

V. ANALYSIS OF MEDICAL EXAMINATION DATA

The 163 supervisors whose personal history and psychological test data were analyzed were given medical examinations which included urinalysis. Vital capacity was measured by means of the Spirometer. Color vision was determined by the Ishihara Test. In all, approximately fifty measurements, or judgments, were made and recorded separately concerning the physical condition of each man. One physician made all of the examinations. The interpretation of physical examination records never has been rigid or

exact. It is very likely that the physician who conducted these examinations would not agree entirely with another examiner of equal competence as to the physical condition of each supervisor. There are certain allowable deviations on many measures. Even with all of these limitations a careful analysis of the records was made in the hope of finding some items in the medical examination which might help to predict success as a supervisor. The final conclusion, however, was that no single physical examination item was significant, although total physical condition has a very slight positive relationship to supervisory success.

After all of the physical examinations were completed, the Medical Examiner was asked to inspect total records and to sort them in eight groups of approximately twenty records each, ranging from those judged to be in "best" physical condition to those rated "worst." The final result represented the opinion of only one man. The relationships between age, physical ratings, and ratings on job efficiency are as follows:

Age and Physical Rating.	$-.50 \pm .04$
Physical Rating and Criterion.....	$+.19 \pm .06$
Age and Criterion.....	$-.18 \pm .06$
Physical Rating and Criterion, holding age constant.....	$+.12$

Table 6 shows the relationship between age and the estimates of total physical condition made by the Medical Examiner.

Two-thirds of the supervisors under forty years of age (67 out of 104) were

rated in the upper half of the group so far as total physical fitness was concerned. Only one man out of the 33 above 45 years of age was in the upper half physically.

them with some similar group. We have, fortunately, comparable records on a number of items in the Life Conservation Studies, made by the Heart Council of Greater Cincinnati.⁴

TABLE 6

Relationship between age and total physical fitness measured on an eight-step scale

PHYSICAL RATING	AGE							Total
	20-27	28-33	34-39	40-45	46-51	52-57	58 or over	
I (Best)	6	9	3	2				20
II	5	2	8	4	1			20
III	5	6	5	4				20
IV	2	9	7	2				20
V	5	7	2	3	2	1		20
VI	5	1	5	3	3	2	1	20
VII	2	2	3	5	5	2	2	21
VIII (Worst)	1	1	3	3	4	7	3	22
Total	31	37	36	26	15	12	6	163

TABLE 7

Weight

CLASSIFICATION	PER CENT	
	1,000 industrial workers*	163 supervisors
20 pounds or more in excess of standard	22.4	30.1
10-19 pounds in excess of standard	12.2	11.0
0-9 pounds in excess of or less than standard (normal)	33.5	31.3
10-19 pounds less than standard	16.7	17.8
20 pounds or more less than standard	15.2	9.8
Total	100.0	100.0

* Muhlberg, *et al.*, *op. cit.*, pp. 57-58.

It is of interest and importance to have a description in general terms of the health of factory supervisors. The best way to present this is to compare

The 1000 machine and hand tool operators and the 163 supervisors are comparable in the following respects, (a) residence in same city, (b) practically identical distributions of ages within the two groups, (c) sex, race, and general occupational level.

The average age of the men examined by the Heart Council was 37.7 years. The average age of the supervisors included in this study was 37.1 years. Table 7 presents the data for weight for the two groups.

The supervisors tend to be above weight in comparison with the 1000 industrial workers who were examined by the Heart Council. There were

⁴ Muhlberg, William; Allen, Floyd P.; McCord, Carey P.; Minister, Dorothy K. *Physical Impairment among Industrial Workers*. Cincinnati: Heart Council of Greater Cincinnati, 1930. 92 pp. (mimeographed).

30.1 per cent of the supervisors, as compared with 22.4 per cent of the control group, who were twenty pounds, or more, in excess of standard weight. Table 8 shows the distribution of height in the two groups.

The supervisors tend to be above the average height of American men in general; 66.9 per cent are 5 feet 8 inches, or taller.

Table 9 shows the frequency of operations in the two groups.

The supervisors had been operated upon more frequently for appendicitis,

than those of the industrial workers. Diminished hearing and flat-footedness occurred slightly more frequently in the supervisory group. Pulse pressure of 50 mm. or more occurred in 43.6 per cent of the supervisors, as compared with 28.8 per cent of the industrial workers.⁵

On the whole, the medical examination data yielded few important statistical results so far as contrasted groups were concerned. This may be due to the fact that annual examinations were

TABLE 8
Height

HEIGHT <i>inches</i>	PER CENT	
	1,000 industrial workers*	163 supervisors
60-63	3.2	1.8
64-67	36.3	31.3
68-71	48.8	54.0
72-76	11.7	12.9
Total,	100.0	100.0

* Muhlberg, *et al.*, *op. cit.*, p. 23.

hernia, tonsils and other "head surgery," and diseases of the genito-urinary system than the industrial workers examined. The frequency of operations in the two groups are 38 per cent and 29.1 per cent respectively. This does not necessarily mean a greater degree of defect in the supervisory group. It may mean closer medical supervision and more attention to the correction of physical defects.

Additional comparisons may be cited. The teeth and eyes of the supervisors were in better condition

TABLE 9
Percentage table of operations

OPERATION	PER CENT	
	1,000 industrial workers*	163 supervisors
Appendectomy.	5.9	6.7
Hernia.	4.9	5.5
Tonsillotomy.	11.3	16.6
Head surgery (other than tonsillotomy).	5.3	6.1
Genito-urinary.	1.7	3.1
Total.	29.1	38.0

* Muhlberg, *et al.*, *op. cit.*, p. 21.

required for all supervisors; thus, the present group did not represent a random sampling of men, so far as physical fitness was concerned. Or, it may be due to the fact that the physical ratings represented the opinion of only one man, the Medical Examiner. The physical examination was of value, however, as an inventory of the physical condition of the present group of supervisors, and it emphasized the desirability of examining every individual before appoint-

⁵ Muhlberg, *et al.*, *op. cit.*, p. 59.

ment as a supervisor, in order to discover physical handicaps.

This study of mental and physical characteristics of supervisors made possible the writing of confidential standards to be used by Works Managers in selecting new supervisors who will be like the best men who constitute the present group.

VI. SUMMARY

1. Nine test forms, containing 820 items, were submitted to 163 factory supervisors in two periods of two hours each.

2. Personal history records, covering fifteen items of information, were obtained from each supervisor.

3. Each supervisor was given a complete medical examination by one physician. Approximately fifty measurements, or judgments, were recorded relating to the physical condition of each man.

4. Twenty-three superintendents (immediate superiors) served as judges and rated the supervisors. Each supervisor was rated by four superintendents.

5. Each judge rated a group of 45 men, by means of three different methods: (a) Order of Merit, (b) Paired Comparison, (c) Graphic Rating Scale.

6. Since each supervisor was rated by four judges, by means of three different rating methods, the rating, or criterion score, finally assigned to him represented the average of twelve

separate judgments concerning his ability as a supervisor.

7. The (uncorrected) Pearson r for the two halves of the rating measures was $+ .80 \pm .02$.

8. Four personal history items were significant in differentiating between the men in the poorest third, and the men in the upper two-thirds of the group of supervisors. They were: (a) age, (b) schooling, (c) statement of belief concerning blue-print reading ability, and (d) military service record.

9. Only 85 of the 820 psychological and interest items proved to be significant. Difficult test forms yielded more valid items than easy test forms. Company information items, especially prepared for the purposes of this study, showed a greater proportion of valid items than purchased tests. The correlation between the criterion and total score on the 85 significant test items was $+ .71 \pm .03$.

10. No single item included in the medical examination proved to be significant. The correlation between total physical rating and the criterion of success on the job (with age held constant) was $+ .12$.

11. The study resulted in the writing of confidential standards for the future discovery of men in the ranks who are of supervisory calibre. Personal history, score on the newly developed *Test for the Selection of Supervisors*, and physical fitness will be taken into consideration.

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Testing the O'Connor Wiggly Block Test

BY H. H. REMMERS, *Purdue University*, AND J. W. SCHELL, *George Washington High School, Indianapolis, Indiana*¹

Since 1927 when Keane and O'Connor first described in these pages the now widely known "wiggly block," many have toyed with the test, but few have experimented as Professor Remmers and Mr. Schell have done, to measure its validity and to ascertain in what ways it may advantageously be used as one member of a battery, in sampling a student's mechanical aptitudes.

An experimental study designed to evaluate reliability and validity of the O'Connor Wiggly Block Test was carried out using 109 students in high school shop courses. The criterion of validity was shop semester marks. It was found that (1) the reliability of the test for the population in question was .57 for the average of three trials, a value substantially the same as that estimated from two single-trial reliabilities reported by O'Connor; (2) validity for machine shop grades, both measures corrected for attenuation, was found to be .984, and for four shop courses combined, .667 (uncorrected r 's were .62 and .42, respectively); (3) there was no appreciable practice effect for three trials. Suggestions for further experimentation designed to eliminate the very serious weaknesses of the test conclude the paper.

THE O'Connor Wiggly Block Test for Mechanical Aptitude² has had wide and favorable publicity as a test of mechanical aptitude, particularly as required for prospective engineers.³ The qualitative descrip-

tion of the ability measured by the Wiggly Block Test is given by O'Connor as follows:⁴

"What then, in specific terms, is the ability, measured by the wiggly blocks, which allows its possessor to see structural relationships but does not measure past knowledge or training or education? A mechanical genius subconsciously recognizes the nine pieces as of three types: corners, sides and center. The classification represents no perceptible step in his solution of the

¹ Division of labor in this study was as follows: Schell, as Acting Instructor in Vocational Trade and Industrial Education, Purdue University, collected the data and calculated the coefficients of correlation given in the study. All other calculations were made by Remmers, who is also responsible for the treatment of the data as presented here.

² O'Connor, Johnson. *Born That Way*, Williams & Wilkins Co., 1928, pp. 27-36 and 209-213.

³ At a meeting of the Vocational Section

of the State Teachers Association of Indiana, 1932, for example, a paper was read strongly urging the use of this test as a highly valid and reliable instrument in vocational guidance.

⁴ *Op. cit.*, pp. 130-131.

problem, calls for no obvious effort. One less gifted in this line, but with, nevertheless a trace of structural instinct, consciously, and often actually, assort the nine blocks into three separate piles on the table, and then selects as he needs the pieces. One with no such endowment, picks aimlessly any block, without recognizing the three types. This man almost invariably consumes six minutes or longer, as compared with the two or three needed by a gifted mechanic. It has often been said that a scientific problem, clearly stated, is half solved. The distinguishing mark of a good mechanic or successful engineer, is ability to visualize structure so clearly that analysis is made easy.

"Mechanics, engineers, and scientists have much in common, for the scientist, even more than the mechanic or engineer, must visualize; and the few scientists who have tried the blocks have done well.

"... The wiggly blocks select the mechanical genius. They measure an innate aptitude for visualizing the essential relations of structure, as natural to him who does them well as respiration, and cast a glimmer into the incertitude of a slowly dissolving future."

It seemed to us in view of the rather sketchy data so far published and also on a *a priori* grounds, that the test might leave much to be desired in the way of both reliability and validity. It seemed *a priori* improbable that such a small "worksampl," to use O'Connor's term, would yield sufficiently stable results to enable prediction of vocational success or failure.

O'Connor believes that two extreme cases cited,⁵ one of whom finished the test successfully in thirty seconds, while the other required a half hour, yield a "premonition . . . that, after the fourteenth or sixteenth year, when the child applies to the vocational school for specific training or to the

world for work, his capacities are fixed; and, if they originated from early environment, are now so ingrained in his nature that he might equally well have been born that way."

Somewhat more precise data on reliability and validity are contained in a footnote,⁶ to the effect that the "correlation of the first and second trials is low (0.36) as is also that between the first and third (0.38). The average of three trials is, however, reliable, for it correlates 0.76 with another mechanical test, Worksampl 75, Formboard 4b, designed by Dr. Grace H. Kent, and administered without introductory boards." No statement concerning the reliability of the Kent Formboard for the population in question or of the size of the sample is given. As will be shown later, this correlation of 0.76 is almost certainly spuriously high.

In view of the above considerations, it was decided to set up an experiment to obtain data on both reliability and validity, the criterion for validity being semester shop grades of high school students.

THE SUBJECTS

The subjects used were 109 boys in shop courses—60 boys in the high school machine shop in Muncie, Indiana; and 49 in the drawing, woodshop, printing, and auto mechanics classes in Peru, Indiana. These boys meet O'Connor's age criterion for fixed capacity as previously quoted.

EXPERIMENTAL PROCEDURE

In each of the two high schools a shop teacher was given careful pre-

⁵ *Op. cit.*, pp. 27-33.

⁶ *Op. cit.*, p. 29.

liminary training in administering the test, following which the students were tested over a period of three or four weeks as the time and convenience of the teachers permitted. The testing and scoring instructions as given by O'Connor were followed, time scores being recorded for each of three trials for each student.

At the end of the semester the semester marks in shop work were recorded for each of the students. These served as the criterion of validity for the test.

Intercorrelations of the time scores for the three trials were calculated for the total population of 109 students, but validity coefficients (correlations of average test score with semester mark) were calculated separately for the two high schools. It was assumed that the type of shop work, standards of marking, etc., in each of the two situations were too diverse to make it safe to combine the two sub-samples for determining validity. The difference between the two validity coefficients proved this assumption to be sound, as appears later.

RELIABILITY

The intercorrelations of the time scores on the test gave results as follows:

$$\begin{aligned} r_{12} &= .32 \pm .058 \\ r_{13} &= .31 \pm .058 \\ r_{23} &= .29 \pm .059 \\ \text{Av. } r &= .307 \end{aligned}$$

The correlations are of approximately the same order of magnitude as the two reported by O'Connor and previously quoted ($r_{12} = .36$, $r_{13} = .38$). The differences between our results

and those of O'Connor are within the allowable experimental error, the differences in each case being slightly less than one probable error of the difference.

In order to obtain data on the increase in reliability due to averaging the three trials of each subject, the correlation of scores on each trial with the sums of the other two trials were calculated with the following results:

$$\begin{aligned} r_{1(2+3)} &= .357 \pm .056 \\ r_{2(1+3)} &= .362 \pm .056 \\ r_{3(1+2)} &= .377 \pm .055 \\ \text{Av. } r &= .367 \end{aligned}$$

It appears that there is a small but consistent increase in these correlations as the result of summing two of the trials. The hypothesis that this increase might be predicted on the basis of the Spearman-Brown law⁷ seemed plausible, and could be tested from the data at hand. If this law applies to the present data, then correction for attenuation⁸ of the average intercorrelation of single-trial *vs.* the sum-of-two-trial scores should yield a result of approximately 1.00, as shown below. The value $\sqrt{.470}$ in the denominator is the reliability of the sum or average of two trials as predicted by the Spearman-Brown formula.

$$\text{Corrected } r = \frac{.367}{\sqrt{.307} \sqrt{.470}} = .91$$

This result is in substantial consonance with the hypothesis, and it follows from this that the reliability of the average of three trials for our data is approximately .57, a reliability gen-

⁷ Kelley, T. L. *Statistical Method*, pp. 205-208.

⁸ Kelley, *op. cit.*, p. 204, formula 155a.

erally considered below the minimum required for *group* comparisons, to say nothing of individual prognosis.⁹ A reliability of .57 is only eighteen per cent better than a sheer "guess" or chance placement of the individuals measured for the ability in question.

The data were also investigated for the presence of practice effect by comparing the averages for the successive three trials. Practice effect would be shown by a consistent and statistically reliable decrease in the means of successive trials. The data shown below indicate no such consistent trend, and it may be fairly safely assumed that for practical purposes any practice effect for three trials may be neglected. While the average interdifferences of

	TRIALS		
	1	2	3
Arithmetic mean.....	2.63	3.42	2.62
Standard deviation of mean.....	.21	.24	.21

the means in two of the three cases show a statistically reliable difference, the ratio of the difference to its standard error being approximately three, these differences must be the result of sampling and grouping errors.

VALIDITY

As already stated, the criterion measure of validity for the Wiggly Block Test was semester marks in shop work. The correlations follow:

	<i>r</i>	<i>n</i>
Muncie.....	.62 ± .051	60
Peru.....	.42 ± .078	49

⁹ See, for example; Hull, Clark. The Correlation Coefficient and Its Prognostic Significance, *Journal of Educational Research*, Vol. 15, 1927, pp. 327-338.

These validity coefficients, in view of the demonstrated unreliability of the test, are rather surprisingly high. They indicate that, if the functions measured by the test were more accurately measured, the test would predict very closely achievement in shop work as measured by semester marks. The reliability of the semester marks is unfortunately not known. Numerous studies of the reliability of semester marks in many different subjects have been published, however, and a generous estimate of the average reliability is .70.¹⁰ Using this estimated value in correcting for attenuation in the case of the Muncie data we obtain

$$r_{\infty} = \frac{.62}{\sqrt{(.57)(.70)}} = .984$$

In other words, the functions measured by the Wiggly Block Test and by semester shop marks are practically identical.

The data for the Peru sampling similarly treated yield $r_{\infty} = .667$.

These two different results seem quite reasonable when it is recalled that in the case of Muncie the experimental subjects were all in the machine shop, while those at Peru were in four different shops which on the face of the situation seem unlikely to involve identical abilities—shop courses in drawing, woodworking, printing, and auto mechanics.

The validity coefficient of .76 previously quoted from O'Connor—the correlation of the average of three trials on the Wiggly Block Test with the Kent Formboard—is of dubious authenticity. The average of the reli-

¹⁰ Symonds, P. *Measurement in Secondary Education*, Macmillan Co., 1927, p. 401.

ability coefficients (.36 and .38) for the Wiggly Block Test scores cited by O'Connor when stepped up by the Spearman-Brown formula yields a reliability for the sum or average of three trials of .64. This value in order to yield a correlation coefficient of .76 with Kent Formboard Test scores would require a reliability for the latter of *at least* .91 for the population in question. Unfortunately O'Connor cites no data on reliability for the Kent test, but it seems unlikely that its reliability would be as high as is required to account for the correlation quoted.

SUMMARY, CONCLUSIONS, AND SUGGESTIONS FOR FURTHER INVESTIGATION

Data from 109 high school students on the O'Connor Wiggly Block Test and semester marks in shop courses were analyzed to determine reliability, practice effect, and validity. Our findings support the following conclusions:

1. The test is much too low in reliability to be used as a satisfactory tool for vocational guidance.
2. Within the reliability of the measures used, the test has a high degree of validity when semester marks in shop courses constitute the criterion.
3. Practice effect for three trials on the test is negligible.
4. Validity of the test as measured against the Kent Formboard Test is probably spuriously high as reported by O'Connor.

Our data suggest that further fruitful experimentation designed to elimi-

nate the very serious weaknesses of the test may possibly lie in the following directions:

1. A greater number of trials. If practice effect were found to be unimportant beyond three trials, it would theoretically be possible to obtain any desired degree of reliability. To obtain a reliability of .90, however, would require twenty repetitions, or on the average about one hour of continuous testing. This would be a rather expensive procedure since the test has to be individually administered.
2. Devising additional "worksamples" to measure abilities closely similar to that measured by the Wiggly Block Test. A series of such "worksamples" might be made to measure reliably whatever is now measured very unreliably by the Wiggly Block Test, and could then be very useful in vocational guidance. The Kent Formboard would apparently be one such additional work-sample of considerable promise.

Whether or not individuals are "born that way" is a moot issue of considerable theoretical importance, but does not directly affect the issues raised in this paper. The problem of the modifiability of the ability measured by the Wiggly Block Test is, however, one for experimental determination rather than a *a priori* assumption.

Army Alpha Revised—Short Form

By CHARLES R. ATWELL AND F. L. WELLS, *Psychology Laboratory, Boston Psychopathic Hospital*

The recent F. L. Wells revision and modernization of Army Alpha has already found favor. The shorter, yet still reliable, form will increase its usefulness.

IN HIS paper, "A Useful Abbreviation of Army Alpha,"¹ Hendrickson reported high correlations between Army Alpha scores and four selected subtests of the Army Alpha series. This led to the present attempt to develop a short form of the revision of Army Alpha, recently described by F. L. Wells in THE PERSONNEL JOURNAL.

The subtests to be used for this purpose were selected according to considerations as follows: Subtest 1 could be omitted as serving essentially as a shock absorber, which function could be taken over in an abridgment by the easy initial items of Subtest 2. The tests of Subtest 2 are also sufficiently close to those of actual life to commend its inclusion. Since Subtest 3 does not distribute well, it was discarded; Test 4, on the other hand, distributes well, and embodies the well-tried psychometric principle of the vocabulary test. Subtests 5 and 6, especially 5, show relatively erratic behavior in relation to the others, and could be the better spared. Subtest 7 has performed very well in distribution

and reliability, and has also given indications of possessing special interpretive value. Subtest 8 was also preferred because of the general validity that directions tests appear to have.

Some change was made in the order of the subtests; the first page necessitates a relatively "blind" test, and Subtest 2 is unsuitable on this ground, for the same reason that it makes a good "shock absorber." The device was adopted of putting the heading above Subtest 7, to be the last of the series. The directions of Subtest 7 make relatively long reading, and the complexity of the task itself safeguards it moderately well against anticipation. After the subject has filled in the heading, the folder is turned over, disclosing the readily understood and shock-absorbing Subtest 2. The inside of the folder is occupied by Subtests 4 and 8, as revised. The order of the tests by name is thus arithmetic, opposites, directions, analogies.

The first trial made of this abridgment was to study the scores made in certain of the standardization work on revised Alpha. The scores on the above Subtests 2, 4, 7 and 8 correlated

¹ School and Society, 1931, 33, 467-468.

with the total scores of the "old," Army, and "new" revised forms of Alpha, as is shown in table 1. The tests were taken by college students and student nurses, practically all in the upper 25 per cent

should be borne in mind that these coefficients represent only a part of the general intelligence distribution (roughly its upper 25 per cent) and that they have undergone no correc-

TABLE 1
Correlations of short form with old and new Army Alpha

Revised Alpha administered first		
100 cases Total New vs. Old	$r =$	.74
100 cases Subtests 2, 4, 7, 8 (New) vs. Old	$r =$	.71
100 cases Subtests 2, 4, 7, 8 (New) vs. Total New	$r =$	.92
60 cases Total New vs. Old	$r =$	.85
60 cases Subtests 2, 4, 7, 8 (New) vs. Old	$r =$	.77
60 cases Total New vs. Subtests 2, 4, 7, 8 (New)	$r =$	.91
Old Alpha administered first		
100 cases Old vs. Total New	$r =$	.82
100 cases Old vs. Subtests 2, 4, 7, 8 (New)	$r =$	.81
100 cases Subtests 2, 4, 7, 8 (New) vs. Total New	$r =$	.93
89 cases Old vs. Total New	$r =$	.82
89 cases Old vs. Subtests 2, 4, 7, 8 (New)	$r =$	.82
89 cases Subtests 2, 4, 7, 8 (New) vs. Total New	$r =$	.91

of intelligence scores. The maximum score in the Alpha test is 212 points, in the present abridgment 140; multiplying an abridgment score by 1.5 gives a figure corresponding to a total alpha score, and interpretable in terms of alpha norms.

Comparisons were then made of the abridgment ("short form") and the total new Alpha, in the same manner as the new Alpha had in its turn been compared with the Army Alpha. These data were generally obtained in groups of 30 or 40 individuals, and in such cases the average correlation coefficient is cited, with its A. D. The form of test cited first in the following tables is that which was administered before the other. It

tional treatment. The coefficients follow:

<i>N</i>		<i>r</i>	<i>A. D.</i>
50	Short vs. Total New	.79	
116	Total New vs. Short	.795	.005
455	Total New vs. Total New	.80	.046
108	Old vs. Short	.83	
105	Short vs. Old	.74	
377	Old vs. Total New	.751	.072
368	Total New vs. Old	.806	.055
40	Short vs. Short	.77	

Inner (split half) reliability coefficients were obtained between odd and even items, with result as follows:

<i>N</i>		<i>r</i>	<i>A. D.</i>
216	Total New	.765	.028
150	Short New	.795	.005
255	Old	.858	.043

Ninety cases had taken two short Alpha forms a month apart; their "repeat" reliability coefficient was .72.

given by themselves, as a "short form" the distribution of the short form scores compares not unfavorably

TABLE 2
Distribution of test scores

160 CASES			104 CASES		
Score	Total revised form Number of cases	Subtests 2, 4, 7, 8 factored Number of cases	Score	Total revised form Number of cases	Subtests 2, 4, 7, 8 factored Number of cases
205	0	1	185	0	2
200	1	0	180	2	0
195	1	2	175	3	2
190	3	1	170	1	3
185	3	2	165	2	2
180	4	5	160	3	4
175	6	8	155	3	5
170	8	8	150	4	5
165	8	6	145	7	8
160	12	8	140	9	5
155	15	10	135	12	3
150	10	8	130	8	7
145	15	13	125	10	12
140	10	16	120	5	7
135	15	11	115	8	7
130	12	6	110	8	11
125	9	19	105	5	3
120	7	6	100	4	4
115	5	8	95	4	2
110	2	5	90	0	5
105	6	4	85	2	3
100	1	5	80	1	2
95	3	4	75	0	1
90	2	0	70	1	0
85	0	1	65	1	1
80	0	0	60	1	0
75	1	1			
70	0	0			
65	0	1			
60	1	0			
55	0	0			
50	0	0			
45	0	1			

The sums of the scores of Subtests 2, 4, 7 and 8, taken as part of a total new alpha, distribute approximately as do the total Alpha scores of which they form a part. When these tests are

with that of the Alpha as a whole. The distributions of the two series of data are shown in table 2.

The normal time of giving the short form, from beginning the directions to

collecting the folders, is 16 minutes; for the total revision it is 30 minutes, for the Army Alpha 35 minutes. Normal time of scoring the short form is about half that for the total revision, and one-third that for Army Alpha. The revised short form compares with

the total original form substantially as well as does the total revision.²

Manuscript received December 28, 1932

² Copies of this short form of Alpha may be obtained from the Psychological Corporation, 522 Fifth Avenue, New York.

Definitions in Industrial Psychology

BY HARRY DEXTER KITSON, *Teachers College, Columbia University*

Since the chief aim of scientific method is to ascertain precise relationships between variables, it is essential that investigators in industrial psychology should be in agreement regarding the precise meanings of the terms they use to describe these variables and the relationships between them. The following definitions, formulated in French by a representative international group, have been translated by Dr. Kitson.

A COMMITTEE on terminology of the International Conference on Psychotechnique has studied a number of terms currently used by personnel workers, and made a report which represents agreement on a number of definitions. This report is translated from *Le Travail Humain*, March, 1933 (Conservatoire National des Arts et Métiers, Paris) with the kind permission of the editor, J. M. Lahy. Equivalent terms are given, in the original report, in French, English, German, Italian, Russian and Polish.

It is worthy of note that committees on terminology have been at work for several years in two American organizations: The American Psychological Association and the National Vocational Guidance Association. This leads to the hope that through the efforts of these committees, working on an international scale, a common base will be furnished through which personnel workers in all countries can make a more concerted attack on their problems.

1. *Centile*. The committee decided to replace the term "percentile" by

that of "centile," formed according to the same rule as that which governs "decile" and "quartile."

2. *Age*. Following a mathematical convention universally accepted, an age, expressed in years, should correspond to the median of the ages contained between two successive steps; thus 10 years will correspond to the ages which fall between 9 years 6 months 1 day and 10 years 5 months 29 days, etc. [i.e. age at nearest birthday.]

3. The committee decided on the following meanings for the terms "error," "variation" and "deviation," which are frequently loosely employed:

a. *Error*. There is an error when one can only approximately measure an unknown but constant value (for example, the brightness of a star).

b. *Variation*. If one measures a dynamic process (for example the reaction-time of a subject), one finds, all apart from the errors of measurement, certain variations, since the subject varies from one reaction to the other.

c. *Deviation*. If one characterizes

a group of individuals, the difference between any individual value and a value representing the group is called "deviation."

4. Statistical indices of a test.—The committee adopted the following terms relative to the statistical indices of tests:

a. *Homogeneity*. The coefficient of correlation between two parts of a test (odd and even questions) should be considered as measuring the homogeneity of the test and should be called "coefficient of homogeneity."

b. *Equivalence*. The coefficient of correlation between two supposedly equivalent forms of a test administered at brief intervals shall be called "coefficient of equivalence."

c. *Constancy*. The coefficient of correlation between two applications of the same test shall be called "coefficient of constancy," regardless of the amount of time that has elapsed between the two applications.

d. *Reliability*. The three coefficients examined above are considered as measuring the reliability of the test and can be called "coefficients of reliability." The committee recommends, however, that the terms reliability or coefficient of reliability never be used without indicating which of the three coefficients is meant. The useless and equivocal term "coherency" is to be avoided.

e. *The differentiating value* of a test is its capacity to furnish a satisfactory curve of distribution which will throw into relief the individual differences among the subjects.

f. *Diagnostic value*. It may be said that a test has good diagnostic value when its differentiating value and its reliability are satisfactory.

g. *Validity*. The validity of a test

means the degree of relation between the performance of the subject in the test and his performance in some other activity which the test is supposed to predict. The "coefficient of validity" is the coefficient of correlation between these two variables.

h. *Prognostic value*. When the validity applies to an activity subsequent to the application of a test, it measures the "prognostic value" of the test. Note: The term "diagnostic value" is to be avoided, because it gives the impression that the investigator seeks to reach, behind the result of the test, an unknown and unknowable psychological faculty.

5. General terms involving the notion of relation between two quantities. The committee agreed upon the following definitions:

a. *Relation*. There is relation between two characteristics of a group if, when one of the characteristics has a known value, the trend of the other is affected.

b. *Correlation*. In the case of measurable quantities, the relation takes the name of "correlation," and it is desirable to use the term only in this case.

(1) The Pearson coefficient of correlation is designated by the term simply, "coefficient of correlation," or "correlation of magnitude."

(2) The Spearman coefficient is designated by the terms "coefficient of coordination" or "rank correlation."

c. *Contingency*. In the case of non-measurable quantities, the relation takes the name, "contingency."

Note: The word "covariation," which is sometimes employed in the exact sense given to the word "correlation," becomes useless.

Sex Differences in Occupational Interests of High School Students¹

BY HAROLD D. CARTER AND E. K. STRONG, JR., *Stanford University*

The occupational interests of girls apparently ripen earlier than those of boys. Is this why their interests more often resemble those of men in such callings as lawyer, Y. M. C. A. Secretary, and city school superintendent?

In order to study the nature and extent of sex differences in the occupational interests of young persons, the Strong Vocational Interest Blank was administered to two groups of junior and senior high school students. The first group was composed of 34 pairs of unlike-sexed twins, and the second group included 100 boys and 100 girls from the same school populations.

Results on the two groups of subjects are in good agreement. Scores of the males are significantly higher on the scales for engineer, chemist, farmer, physicist, doctor, and purchasing agent. Small differences are found on the scales for psychologist, mathematician, architect, real estate salesman, personnel manager, vacuum cleaner salesman, and office clerk. The girls' scores are significantly higher on the scales for artist, lawyer, journalist, advertiser, life insurance salesman, teacher, minister, Y. M. C. A. secretary, city school superintendent, and C. P. A.

All but one of the occupational interest scales which show higher scores for boys are in the "science" group. The girls appear to have more interest in those occupations which involve the use of language, and more interest in work which brings them into contact with many people. The interests of the girls are apparently not limited strictly to those occupations traditionally open to women. Comparisons with Strong's data suggest a possible explanation of the findings in terms of greater maturity of interests on the part of the girls.

THE large number of women in occupations outside the home make it very desirable to study their vocational interests. It has been shown elsewhere (1, 5) that the changes

of interests with age are relatively slight in comparison with individual differences; this indicates that study of the interests of younger subjects is more practical, and of greater theoretical importance, than formerly supposed. The further fact that service to the individual can be performed most efficiently if his interests can be determined before vocational malad-

¹ The present investigation is one of a series conducted by H. D. Carter, as a Social Science Research Council Fellow at Stanford University, under the direction of Lewis M. Terman.

justments arise, suggests the need for research on the interests of young boys and girls.

Measurements of interests of both boys and girls were obtained in the present study by use of the Strong Vocational Interest Blank. This blank meets the need for a measuring instrument standardized on groups in a variety of occupations, including several commonly entered by both men and women. The Strong blank also enjoys the advantages of considerable previous research (1, 4, 5, 6). Furthermore, the actual trend has been for women to enter the occupational world in competition with men, in occupations at first exclusively held by men, hence it suits our purposes to use a blank developed for men and validated on occupational groups, to see which of those interests are possessed by girls.

THE SAMPLE

Data were secured on two groups of subjects. The first group consists of 34 pairs of unlike-sexed twins, from the junior and senior high school populations of San Francisco, San Jose, Palo Alto, and Redwood City. The second group consists of 100 boys and 100 girls from those same school populations. The main advantage of the twin group is that the boys and girls included are exactly paired for age, family environment, social and economic status, etc. The second, larger group offers a check on the results obtained with the first group.

The ages of the twins ranged from 13 to 18 years (mean, 16.0; S.D., 1.40). In the other sample, the ages of the 100 boys ranged from 12 to 20 years

(mean, 16.2; S.D., 1.65); of the girls, from 13 to 20 years (mean, 16.22; S.D., 1.35). It has been shown elsewhere (1) that the correlations of the interest scale scores with age, for this age range, are uniformly small, and average close to zero.

All the children included in the sampling were from grades 7 to 12 inclusive. As in all such samples, the younger children tended to be brighter than average. This, and the fact that testing was done in small groups, under careful supervision, simplified the problem of collecting the data. Some of the younger children required much more than standard time to complete the blank, and in a few cases it was necessary to explain carefully just how some parts of the test were to be filled out, but no serious difficulties were encountered. It was considered permissible to use the test for experimental purposes with these groups, although perhaps the practical use of the instrument at the present time may best be limited to somewhat older subjects.

RESULTS

Table 1 shows the means and standard deviations of scores for the boys and girls in the twin group, the differences between the means for the two sexes, the standard errors of these differences, and the differences divided by their standard errors. The correlations of the boys' and girls' scores, necessary for computing the standard errors of the differences (See reference 3, page 182, formula 140) are presented elsewhere (1). Table 2 shows the scales arranged in order, from those showing the most significant superi-

ority of scores of boys, to those showing the most significant superiority of scores of girls. Six scales show significant differences in favor of males, six more show differences too small to be

100 high school boys and 100 high school girls. The results of this second study are in general agreement with those based on the group of twins. For each group, nine of the

TABLE 1

Showing sex differences in scores on the Strong Vocational Interest Blank

These figures are based on data from 34 pairs of unlike-sexed twins.

	BOYS' SCORES		GIRLS' SCORES		MEAN DIFFERENCE*	S.D. Diff.	Diff. S.D. Diff.
	Mean	S.D.	Mean	S.D.			
1. Advertiser.....	-201.8	179.6	-39.6	188.0	-162.2	41.8	3.88
2. Architect.....	-6.7	152.5	-6.5	136.0	-.2	34.7	.01
3. Artist.....	-161.8	262.3	-44.0	231.8	-117.8	57.6	2.04
4. C. P. A.....	-121.5	63.6	-45.1	69.0	-76.4	14.2	5.38
5. Chemist.....	1.5	109.6	-150.4	117.0	151.9	20.2	7.51
6. Doctor.....	19.2	145.1	-38.6	98.8	57.8	22.8	2.54
7. Engineer.....	36.2	132.9	-160.6	100.6	196.8	21.7	9.07
8. Farmer.....	69.5	101.6	-98.5	144.1	168.0	28.2	5.96
9. Journalist.....	-139.3	199.5	29.7	191.0	-169.0	46.4	3.64
10. Lawyer.....	-79.4	131.9	-6.5	119.7	-72.9	26.1	2.79
11. Life Insurance Salesman.....	-98.7	93.7	-33.1	105.7	-65.7	17.0	3.86
12. Minister.....	-230.4	222.8	-109.0	222.6	-121.4	44.5	2.72
13. Personnel Manager.....	-118.3	161.7	-111.1	144.5	-7.2	33.1	.22
14. Psychologist.....	-139.6	138.4	-160.6	146.9	21.0	25.2	.83
15. Purchasing Agent.....	12.2	87.9	-53.5	76.6	65.7	16.0	4.10
16. Real Estate Salesman.....	-66.9	120.8	-17.6	133.0	-49.3	26.2	1.88
17. School Teacher.....	-118.6	173.7	-60.4	143.1	-58.2	33.1	1.76
18. Vacuum Cleaner Salesman.....	-99.9	170.7	-114.6	159.3	15.7	31.8	.49
19. Y. M. C. A. Secretary.....	-274.0	288.6	-173.4	241.8	-100.6	52.3	1.92
20. Office Clerk.....	-23.1	174.4	-19.7	157.4	-3.4	31.0	.11
21. Physicist.....	9.9	251.5	-170.2	214.1	180.1	41.1	4.38
22. Mathematician.....	-67.2	284.5	-98.8	208.2	31.6	51.4	.61
23. City School Superintendent.....	-189.5	177.1	-88.2	147.3	-101.3	32.5	3.12

* The differences are calculated as boys' mean minus girls' mean, hence a minus sign indicates greater interest of the girls for the particular vocation.

demonstrably significant using such small samples, and the remaining eleven show significantly higher scores for the girls.

Tables 3 and 4 present the corresponding figures based on the group of

scales show differences in favor of the males, and fourteen in favor of the females, and six or seven of the obtained differences are not statistically significant. When the scales are arranged in descending order of the

significances of the superiority of boys' scores, the resulting orders (see tables 2 and 4) correlate .94, which indicates in a crude way the extent of agreement of results on the two groups.

groups, on the basis of four or five group factors measured by the test. Tables 5 and 6 show the trends of sex differences in scores, when the scales are so arranged. The results for the

TABLE 2

Showing the occupational interest scales of the Strong Vocational Interest Blank arranged in order of decreasing size of the differences in scores which favor males, and in order of increasing size of the differences in scores which favor females

These figures are based on data from 34 pairs of unlike-sexed twins. See table 1.

	BOYS' SCORES HIGHER Diff. S.D. Diff.	GIRLS' SCORES HIGHER Diff. S.D. Diff.	CHANCES IN 100 THAT THERE IS A TRUE DIFF- ERENCE	CORRELA- TION WITH INTEREST MATURITY*
1. Engineer.....	9.07		99.99	-.36
2. Chemist.....	7.51		99.99	-.18
3. Farmer.....	5.96		99.99	-.46
4. Physicist.....	4.38		99.99	-.26
5. Purchasing Agent.....	4.10		99.99	-.26
6. Doctor.....	2.54		99.4	-.12
7. Psychologist.....	.83		79	.21
8. Mathematician.....	.61		73	-.07
9. Vacuum Cleaner Salesman.....	.49		68	.16
10. Architect.....		.01	50	-.05
11. Office Clerk.....		.11	54	.17
12. Personnel Manager.....		.22	59	.55
13. Teacher.....		1.76	96	.67
14. Real Estate Salesman.....		1.88	97	-.10
15. Y. M. C. A. Secretary.....		1.92	97	.68
16. Artist.....		2.04	98	
17. Minister.....		2.72	99.7	.74
18. Lawyer.....		2.79	99.7	.26
19. City School Superintendent.....		3.12	99.9	.76
20. Journalist.....		3.64	99.98	.15
21. Life Insurance Salesman.....		3.86	99.99	.20
22. Advertiser.....		3.88	99.99	.11
23. Certified Public Accountant.....		5.38	99.99	.37

* The correlations with interest maturity for each scale have been copied from the manual. See reference 4 in the bibliography.

UNDERLYING FACTORS

Previous studies (4, 6) have indicated that these occupational interest scales may be classified into related

twins and for the other sampling are in close agreement. It is obvious that the interest scores of the boys tend to be higher only for the scales in Group I,

and one other scale; this indicates that the especial field of interests of the males is that of the sciences. The scores of the girls tend to be higher on most of the scales for occupations in Groups II and III. The C. P. A. scale does not fit well into any of the

school samplings do not correlate appreciably with their interest scores, and extensive research (5) has shown that age changes in interests are relatively slight in proportion to individual differences, even when all ages from fifteen upward are included.

TABLE 3

Showing sex differences in scores on the Strong Vocational Interest Blank

These figures are based on data from 100 male and 100 female high school students.

	BOYS' SCORES		GIRLS' SCORES		MEAN DIFFERENCE	S D. Diff.	Diff. S D. Diff.
	Mean	S.D.	Mean	S.D.			
1. Advertiser.....	-201.0	185.8	-79.0	191.0	-122.0	26.6	4.58
2. Architect.....	-21.6	135.9	-11.5	140.5	-10.1	19.5	.52
3. Artist.....	-188.2	246.1	-43.5	234.3	-144.7	34.0	4.26
4. C. P. A.....	-113.2	78.9	-61.6	79.0	-51.6	11.2	4.62
5. Chemist.....	-26.8	133.5	-144.7	112.2	117.9	17.4	6.76
6. Doctor.....	-6.5	141.2	-45.9	116.1	39.4	18.3	2.16
7. Engineer.....	5.0	161.7	-170.0	105.3	175.0	19.3	9.07
8. Farmer.....	68.0	131.1	-104.4	140.2	172.4	19.2	8.98
9. Journalist.....	-140.5	206.1	-19.5	186.1	-121.0	27.8	4.36
10. Lawyer.....	-83.0	132.7	-43.1	117.4	-40.9	17.7	2.31
11. Life Insurance Salesman...	-87.1	106.9	-18.2	98.3	-68.9	14.5	4.74
12. Minister.....	-230.6	208.9	-66.2	228.3	-164.4	30.9	5.31
13. Personnel Manager.....	-94.4	144.5	-108.4	137.9	14.0	20.0	.70
14. Psychologist.....	-160.0	127.7	-175.2	128.7	15.2	18.2	.84
15. Purchasing Agent.....	19.1	80.9	-50.5	74.3	69.6	11.0	6.34
16. Real Estate Salesman.....	-50.8	131.9	-34.8	134.3	-16.0	18.8	.85
17. School Teacher.....	-115.6	153.0	-43.2	143.9	-72.4	21.0	3.45
18. Vacuum Cleaner Salesman...	-86.5	173.2	-73.5	175.1	-13.0	24.6	.53
19. Y. M. C. A. Secretary.....	-245.1	266.9	-118.9	253.9	-126.2	36.8	3.42
20. Office Clerk.....	-9.6	157.6	18.5	155.7	-28.1	22.2	1.27
21. Physicist.....	-24.4	250.7	-196.6	209.7	172.2	32.7	5.27
22. Mathematician.....	-86.2	200.4	-127.6	191.0	41.4	27.7	1.50
23. City School Superintendent	-164.4	159.4	-92.0	144.6	-72.4	21.5	3.36

first four groups (4); as far as this scale is concerned, scores of the females are strikingly superior to those of comparable samplings of males.

INTEREST MATURITY

Another study (1) has shown that the ages of individuals in these high

Such data support the assumption that these interests of the individual are fairly stable traits which are intricately woven into the complex patterns of personality. Hence, if the present experiment were repeated on older subjects, somewhat similar trends of results would probably be obtained,

although specific differences might very well be expected. The work of Strong has indicated that the interests of boys change very greatly between ages fifteen and twenty-five (6). This

more slowly than girls, and it is possible that if a comparison were made between males and females at a somewhat later age, some of the differences might disappear, or might even be

TABLE 4

Showing the occupational interest scales of the Strong Vocational Interest Blank arranged in order of decreasing size of the differences in scores which favor males, and in order of increasing size of the differences in scores which favor females

These figures are based upon scores of 100 male and 100 female high school students.

	BOYS' SCORES HIGHER Diff. S.D. Diff.	GIRLS' SCORES HIGHER Diff. S.D. Diff.	CHANCES IN 100 THAT THERE IS A TRUE DIFFERENCE	CORRELA- TION WITH INTEREST MATURITY*
1. Engineer.....	9.07		99.99	-.36
2. Farmer.....	8.98		99.99	-.46
3. Chemist.....	6.76		99.99	-.18
4. Purchasing Agent.....	6.34		99.99	-.26
5. Physicist.....	5.27		99.99	-.26
6. Doctor.....	2.16		98	-.12
7. Mathematician.....	1.50		93	-.07
8. Psychologist.....	.84		79	.21
9. Personnel Manager.....	.70		76	.55
10. Architect.....		52	69	-.05
11. Vacuum Cleaner Salesman.....		53	69	.16
12. Real Estate Salesman.....		85	79	-.10
13. Office Clerk.....		1.27	89	.17
14. Lawyer.....		2.31	99	.26
15. City School Superintendent.....		3.36	99.9	.76
16. Y. M. C. A. Secretary.....		3.42	99.97	.68
17. Teacher.....		3.45	99.97	.67
18. Artist.....		4.26	99.99	
19. Journalist.....		4.36	99.99	.15
20. Advertiser.....		4.58	99.99	.11
21. Certified Public Accountant.....		4.62	99.99	.37
22. Life Insurance Salesman.....		4.74	99.99	.20
23. Minister.....		5.31	99.99	.74

* The correlations with interest maturity for each scale have been copied from the manual (4).

is particularly true with respect to interests in Groups II, III, and V—the occupations in which the boys seem strikingly below the girls, as reported here. In many respects, boys mature

reversed. It seems probable, however, that the interests of the females, even though changed in position relative to the males, would still be concentrated in those same groups in

which they are found in the present study.

Strong (5) has shown that the influences of age are cumulative, and

nished for most of the scales here used, data showing how those interests correlate with interest maturity scores (4). When these correlations are com-

TABLE 5

Showing sex differences and critical ratios for groups of related interests

The data are based on scores of 34 pairs of unlike-sexed twins.

	BOYS' SCORES HIGHER	GIRLS' SCORES HIGHER
<i>Group I:</i>		
1. Engineer.....	9.07	
2. Chemist.....	7.51	
3. Farmer.....	5.96	
4. Physicist.....	4.38	
5. Doctor.....	2.54	
6. Psychologist.....	.83	
7. Mathematician.....	.61	
8. Architect.....		.01
<i>Group II:</i>		
a. 1. Artist.....		2.04
2. Lawyer.....		2.79
3. Journalist.....		3.64
4. Advertiser.....		3.88
b. 1. Real Estate Salesman.....		1.88
2. Life Insurance Salesman.....		3.86
<i>Group III:</i>		
a. 1. Teacher.....		1.76
2. Minister.....		2.72
b. 1. Personnel Manager.....		.22
2. Y. M. C. A. Secretary.....		1.92
3. City School Superintendent.....		3.12
<i>Group IV:</i>		
1. Purchasing Agent.....	4.10	
2. Vacuum Cleaner Salesman.....	.49	
3. Office Clerk.....		.11
<i>Group V:</i>		
1. Certified Public Accountant.....		5.38

significant trends are revealed when the results of thirty or forty years of development are measured. He has developed a scale for measuring maturity of interests, and has fur-

pared with the results on sex differences shown in tables 2 and 4, some striking uniformities appear. In table 2, for those scales which show significant differences in favor of the boys,

the correlations with interest maturity are uniformly negative, and have an average value of $-.27$. For those scales which show significant differ-

in table 4. For the scales which show a strongly significant difference in scores in favor of the boys, all correlations with interest maturity are nega-

TABLE 6

Showing sex differences and critical ratios for groups of related interests

The data are based on scores of 100 high school boys and 100 high school girls.

	BOYS' SCORES HIGHER	GIRLS' SCORES HIGHER
<i>Group I:</i>		
1. Engineer.....	9.07	
2. Chemist.....	6.96	
3. Farmer.....	8.98	
4. Physicist.....	5.27	
5. Doctor.....	2.16	
6. Psychologist.....	.84	
7. Mathematician.....	1.50	
8. Architect.....		.52
<i>Group II:</i>		
a. 1. Artist.....		4.26
2. Lawyer.....		2.31
3. Journalist.....		4.36
4. Advertiser.....		4.58
b. 1. Real Estate Salesman.....		.85
2. Life Insurance Salesman.....		4.74
<i>Group III:</i>		
a. 1. Teacher.....		3.45
2. Minister.....		5.31
b. 1. Personnel Manager.....	70	
2. Y. M. C. A. Secretary.....		3.42
3. City School Superintendent.....		3.36
<i>Group IV:</i>		
1. Purchasing Agent.....	6.34	
2. Vacuum Cleaner Salesman.....		.53
3. Office Clerk.....		1.27
<i>Group V:</i>		
1. Certified Public Accountant.....		1.62

ences in favor of the girls, the correlations with interest maturity are uniformly positive, and have an average value of $.37$.

The same consistent trend is found

tive; the average is $-.30$. For the scales which show significant differences in scores in favor of females, all the correlations with interest maturity are positive—the average is $.46$.

These clear-cut results suggest that maturity of interests may be one general factor which helps to explain the specific differences here discovered between the sexes.

One point needs further explanation. To state that the interest scores of the boys and girls (sexes treated separately) correlate practically zero with age, and to suggest at the same time that the strongly significant sex differences in interests are probably partly explainable in terms of maturity of interests, seems to present a paradox. Careful consideration indicates that the contradiction is only apparent. The interests of boys and girls are different from the beginning. The small sex difference in general maturation may have led to an increase of some of the differences, and may have decreased others. It is entirely possible, however, that the interests of the girls, from the beginning, resemble the interests of mature persons more than do the interests of boys.

For those who believe that interests are largely determined by environmental factors, a possible explanation of the present findings will not be hard to find. It may be argued that girls and women are subjected to influences of a different sort throughout their lives, and that the influences which surround the girls are such as suit the interests of older persons, while those which affect boys are more freely adjusted to the interests of young persons.

DISCUSSION

In the present study, no conclusions will be drawn concerning the fundamental masculinity or femininity of the

interests measured by these various scales. All the interests measured by the instrument here used are possessed by certain groups of men; previous research has shown that the different types of interests are characteristic of men successful in different fields of work. It is possible that further research will support the view, (here suggested but not conclusively proved), that certain occupational groups of men have interests more like those of women than do other occupational groups of men. Whether or not the explanation is to be sought in training, or in original nature, the problem seems to merit further study.

This report is concerned with study of those interests as they appear among high school students, and among both girls and boys. It is believed that girls, as well as boys, of high school age, fill out the blanks in a sensible fashion and express their real preferences. If interests affect the activities of the young people who possess them, the interests found at these ages are not to be taken lightly.

The results of the present study may indicate either that some interests are more natural to the female personality than are others, or that the training received by girls favors possession of certain types of interests. The limitations on the occupational fields open to women may be in many cases *merely* traditional, and may change in time; the fact that girls possess at least a few interests which extend beyond these traditional limitations, and possess them to a greater degree than do boys, may be regarded as a definite problem in the field of vocational adjustment.

CONCLUSIONS

Apart from generalized interpretations, the results of the present study permit certain tentative conclusions of somewhat more specific nature. The occupational interests of high school girls and boys are shown to present certain consistent differences. The findings are in general agreement with commonsense and everyday observation, but the interests of the girls are not limited entirely to those occupations traditionally set aside for women. For example, the interest scores of the girls, as compared with those of the boys, are significantly higher on the scales for Minister, Lawyer, Life

Insurance Salesman, Advertiser, and C. P. A. The girls are apparently far less interested in things (tables 5 and 6, scales of Group I) than are the boys. Although both sexes have strong "Business" interests, there are striking differences in type. The girls possess far more of the interests in Group II and Group III than the boys. A possible explanation of these findings in terms of maturity of interests is suggested; final conclusions concerning this interpretation will be withheld until the data have been supplemented by similar studies based on older groups.

Manuscript received April 17, 1933

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News Notes

REGIONAL CONFERENCE ON VOCATIONAL GUIDANCE

Sponsored by

NATIONAL OCCUPATIONAL CONFERENCE

To give adequate vocational guidance so that individuals may be properly integrated in their occupational environment, counselors must intensify their efforts, and also utilize the services of experts in the related fields of economics, psychology, sociology, and psychiatry. Such was the general conclusion reached at the regional conference for the Northeastern United States, sponsored by the National Occupational Conference during the week of August 28, to September 2. The informal atmosphere of the life at Camp Stevens, the engineering camp of Stevens Institute of Technology, greatly enhanced the freedom of expression and general good-fellowship so often lacking when conferences are held in hotels or schools. Meetings were held in the mornings and evenings, leaving the afternoons entirely free for enjoyment of the sports and recreational facilities of the camp. Dr. F. J. Keller, Director of the N. O. C., proposed that there be no speeches, so that the program was presented with almost a complete absence of papers and oratory; each topic was presented informally and briefly by authorities and then discussed by the panel and conference method.

This conference brought together representatives and leaders of the vocational guidance movement in all its phases including working counselors, college personnel officers, teachers of guidance, research workers, technicians, school administrators, members of affiliated organizations and the staff of the National Occupational Conference. A novel plan for the program which was carried out very successfully permitted the agenda to be developed by both horizontal and vertical group conferences. In

the horizontal groups members of the conference met to discuss various topics on the basis of the educational level in which they were particularly interested. Thus the college personnel officers, college teachers of guidance, directors of city guidance programs, senior and junior high school counselors formed into separate groups for study of the special problems on their particular levels. The vertical division redistributed the membership on the basis of the particular interests and techniques involved in Vocational Guidance. Vertical groups discussed topics under the following headings: assembling occupational information; teaching courses in occupational opportunities; analyzing individual abilities; counseling; professional and vocational education; placement; follow-up and evaluation.

During the first two days of the conference the horizontal and vertical groups focused their attention on aims and problems and during the last two days made recommendations as to their accomplishment and solution. The result was a hundred and one separate recommendations covering a wide variety of subjects which may possibly be grouped under five general headings, namely: (1) the collection, development, and dissemination of occupational information and vocational trends; (2) the development of tools and devices used in counseling; (3) the training of counselors; (4) the administration of vocational guidance; and, (5) research towards improved procedures for each level.

In the general sessions were presented the most recent developments in the guidance movement and those of affiliated groups. These included sessions on: Occupational Distribution and Occupational Trends in which Dr. Walter V. Bingham explained a series of new charts showing job trends over several decades; The Evaluation of Voca-

tional Guidance, by Dean G. N. Kefauver and Miss Mildred E. Lincoln; Aptitude Tests as a Basis for Counseling, by Dr. Johnson O'Connor and Dr. M. R. Trabue; Personality as a Factor in Occupational Adjustment; The Teaching of Occupations, a demonstration by Miss Mildred E. Lincoln and Mr. Leonard E. Miller, using the pre-freshman engineering group of the Stevens Camp as a class in occupations; Economics and Vocational Guidance, in which Dr. Harold F. Clark presented his theories on the redistribution of work; The Articulation of School and College, by Miss Anna Rose who discussed the Carnegie experiment in Pennsylvania; Personnel Policies of the United States Employment Service described by Dr. William H. Stead; and the Plans and Methods of the Tennessee Valley Authority were explained by Dr. L. J. O'Rourke.

The detailed analysis given the problems and their solutions by pioneers, practitioners and technicians, resulted in new interpretations and evaluations. The narrower view that vocational guidance should be purely a matter of individual adjustment seems now to be dispelled for a broader concept of a readjusted planned society through the proper integration of the individual in society.

WILLARD E. PARKER.

PSYCHOLOGICAL CORPORATION

A meeting of representatives of the Psychological Corporation was held Friday, September 8, 1933, at the Social Science Building, University of Chicago. This meeting, opened to all psychologists and invited business men, was presided over by President Walter Dill Scott, Northwestern University. Lee H. Bristol, Vice President of the Bristol Myers Company, and S. N. Stevens, Northwestern University, spoke on the theme, "Scientific Methods in Consumer and Market Research." Discussion was led by Dr. Henry C. Link, Director of Market Research for the Psychological Corporation.

COLLECTIVE BARGAINING THROUGH EMPLOYEE REPRESENTATION

The National Industrial Conference Board has followed the progress of employee

representation in the United States by means of a series of six surveys, the first in 1919, the latest in 1932. From the comprehensive material on the subject that it has gathered during this period, the Conference Board has prepared a concise monograph "Collective Bargaining Through Employee Representation" intended to provide in condensed form the character of information on the subject that industrial executives are seeking. Obtainable from the National Industrial Conference Board, 247 Park Avenue, New York, \$1.50 postpaid

INDUSTRIAL RELATIONS COUNSELORS MOVE

Offices of the Industrial Relations Counselors have been moved to Radio City, 1270 Sixth Avenue, New York.

STATE OF NEW YORK—DEPARTMENT OF LABOR

Special Bulletin No. 180 "New York Labor Laws Enacted at the Extraordinary Session of 1932 and the Regular Session of 1933" has been prepared by the Division of Statistics and Information. Legislation affecting labor is summarized.

INDUSTRIAL HEALTH RESEARCH BOARD

According to the Thirteenth Annual Report of the Industrial Health Research Board the total number of reports issued by the Board is now sixty-eight. During the last year four reports have been published:

- No. 65. Two Studies on the Psychological Effects of Noise.
- No. 66. An Experimental Study of Certain Forms of Manual Dexterity.
- No. 67. Manual Dexterity—Effects of Training.
- No. 68. Tests for Accident Proneness.

FORTHCOMING EVENTS

- OCTOBER 2-6. *Twenty-second Annual Safety Congress, National Safety Council, Chicago.*
- NOVEMBER 16 AND 17. *Twelfth Annual Autumn Conference, Personnel Research Federation, New York.*
- DECEMBER 6-8. *Annual Meeting, Taylor Society, New York.*
- DECEMBER 6-9. *Annual Conference, American Vocational Association, Detroit.*

Personnel Books

EDITED BY O. MILTON HALL

LABOR RELATIONS UNDER THE RECOVERY ACT

By Ordway Tead and Henry C. Metcalf. New York: McGraw Hill, 1933, xii + 259 pages, \$2.00

Reviewed by EDWARD S. COWDRICK, *New York*

Future students of labor problems in the United States probably will record that the passage of the National Industrial Recovery Act in 1933 released a combination of forces that had profound effects upon personnel administration and all the relationships between employers and employees. When this review was written, these forces were just beginning to take effect, and there was much bewilderment among employers, labor leaders and government officials as to just what and how sweeping would be the changes brought about by the new law. There was urgent need for interpretation, for conciliation of diverse philosophies, and for guidance in putting the policies of the National Recovery Administration into practice.

In that situation the appearance of Tead and Metcalf's new book had a timeliness that was little less than inspired. It brought to the perplexed students of the Government's new industrial experiment a mass of factual and theoretical material which, while necessarily not abreast of the very latest official interpretations of the law, could not but be suggestive and useful. The authors were able to make this contribution largely on account of the fact that a third revision of their standard text book *Personnel Administration: Its Principles and Practice* had just come from the press. Much material from this volume is incorporated in *Labor Relations under the Recovery Act*.

In its content and method of composition the book ranges all the way from a philo-

sophical treatise to a manual of management. In some chapters, particularly those dealing with employee representation and with unionism, detailed suggestions are given which cannot fail to be serviceable, particularly to the employer just venturing into the field of collective bargaining.

The tone of the book is distinctly liberal. Employee representation and unionism both received qualified approval. The authors believe these methods are not mutually exclusive, and that each can be made to supplement the other.

It is wisely suggested that a representation plan or a union agreement does not make up the whole of a successful system of personnel administration:

Methods of joint negotiations (the authors insist) clearly comprise in practice only one phase of a rounded and comprehensive labor or personnel policy. And it has been shown to be vitally important that expert staff attention be paid also to such other phases of personnel policy as the following—selection and placement of new employees; industrial health and safety provisions; provisions to increase security of job tenure and income, such as health and life insurance, pensions and unemployment compensation; education and training of workers; methods of handling grievances; and employees' service features.

In other words, there is a whole range of important managerial responsibilities affecting, for good or ill, the attitudes and relations of employees toward the

company which experience demonstrates have to be handled in an expert way by informed and sympathetic executives. The development of personnel departments in hundreds of companies in the last twenty years has been a response to the recognition of this need. The time has long since passed when they were looked upon as fads or frills or as "welfare" features. They have become an integral part of the management's function of facilitating output by assuring favorable surrounding conditions, physical and mental, for the human beings who do the work.

In discussing employee representation the book, goes into much detail not only regarding the theory of this form of collective dealing, but regarding methods of formulating, introducing and administering representation plans. Much emphasis is laid upon the necessity of a preliminary educational process, designed to prepare executives, supervisors and the rank and file for a new method of joint dealing. Good faith on the part of the employer and a willingness to make some real sacrifice of arbitrary power are strongly stressed. The authors add:

The company which starts employee representation should be prepared to go whither the way leads. The management of every corporation venturing into this field should first ask itself: "Are we prepared to relinquish any of our control and authority in this direction?"

Employers should realize that they are calling into consciousness and into organized existence forces which will gather power with time and experience. We do not say this with any desire to arouse fear. It is rather a counsel of realism and a reminder that the good faith and determination of executives to carry on should be clearly established in their own minds in advance.

The new power created by an employee representation plan may be used constructively or in the opposite way, depending on the direction in which it is led and the extent to which coöperative understanding is developed. But there will come a new sense of power; and it will be exercised. Nor will its exercise cease

at some point which the employer may have arbitrarily set in his own mind. This is definitely not a cause for alarm or concern among managers, but rather the contrary. The whole experience of recent years has been that this new power and new mobilized interest and enthusiasm have been positive forces of genuine value in improving corporate morale. But to have that value best realized there must be intelligent, sympathetic, and constant leadership on the part of the management and the encouragement of able leadership among the employees.

Industrial councils, representing corporation and workers from each separate industry on a national basis, seem to represent the authors' ideal of labor relationships.

In the final chapters an attempt is made to interpret industry in terms of public service rather than of private profits. This interpretation, the authors believe, will more easily be realized now that the National Industrial Recovery Act has come to the support of democratic tendencies already discernible.

Industrial leaders and managers have an impressive opportunity under the National Industrial Recovery Act to institute experiments which look to reconciling the aim of more and better goods and happier and finer people who shall make and consume them. They have an opportunity which they may ignore only at their peril. For the shift to broader objectives and to more democratic means of assuring them has unmistakably commenced. And it will unquestionably continue even when the present emergency legislation has expired.

The professional manager and expert technician can facilitate this process if they will affirm aggressively and be guided more fully by professional standards of public service and social responsibility.

The book evidences the thoughtful preparation and the distinction in style characteristic of Tead and Metcalf's earlier writings. It is to be recommended to employers or others seeking light upon the perplexing labor situations of the present and of the immediate future.

MEASUREMENT AND GUIDANCE OF COLLEGE STUDENTS

First Report of the Committee on Personnel Methods of the American Council on Education, with an Introduction by Dean Herbert E. Hawkes, Chairman of the Committee. Baltimore: Williams & Wilkins Company, 1933, 199 pp., \$1.00

Reviewed by LAWRENCE W. ZIMMER, *New York University*

College personnel affairs have been trying to navigate in a Sargossa of literature expounding almost as many practices of college student measurement and guidance as there have been authors. The First Report of the Committee on Personnel Methods of the American Council on Education brings to light the splendid efforts of the committee and subcommittees to clear the covered waters and make better headway possible.

Starting with the basic record in college personnel procedure—the personal record card of the student—the committee has developed a comprehensive, concise, and practical form which all college personnel officers should study. The review of the present situation in achievement tests is well summarized and the plans for the formulation of better ones are sound and practical. Those who do vocational guidance will be very much interested in the chapter on

Vocational Monographs. An excellent plan of presenting occupational information (one of the most difficult phases of guidance) is given. Its development will supply a long established need.

Although some parts of the report have been published from time to time, the report loses none of its effectiveness in the assembly. In fact, one needs to read the whole report in order to understand and grasp the significance of what the American Council on Education has accomplished.

When one realizes the amount of study which the various committees have contributed to the betterment of college personnel procedure, and realizes the amount of sifting, weighing and discarding which was done in order to get down to fundamentals, they should question very seriously the advisability of continuing with individual procedures instead of working in coöperation with the group.

VOCATIONAL GUIDANCE FOR GIRLS

VOCATIONS FOR WOMEN. By Adah Pierce. New York: Macmillan, 1933, 329 pp., \$2.00

THE GIRL AND HER JOB. By Esther Eberstadt Brooke. New York: Appleton, 1933, 140 pp., \$1.00

Reviewed by DOROTHY P. WELLS, *National Board, Young Women's Christian Association*

Vocations for Women is a rather extensive survey of fields of work college women are entering today. The material was collected and organized by Miss Peirce over a number of years from all available literature and from "many unusual and fugitive documents" in print and mimeographed form.

Most of the chapters have received the benefit of criticism by recognized leaders in the fields discussed. There is an editorial

introduction by W. W. Charters. After the author's introduction, which contains excellent suggestions for analyzing qualifications of the various occupations, the occupations are discussed under five major divisions: the health professions, natural sciences, business vocations, art vocations, and social vocations.

The integration of all occupations and the skills of one occupation which often may

be utilized in another, are very well brought out in each chapter under the headings "Relation to other vocations" and "Historical development."

One wishes that a few of the chapters could have been more comprehensive and that a few of the "newer" occupations could have been surveyed.

The Girl and Her Job has concrete help for the young beginner in business. It is divided into two sections and a preface by Otto Kahn in which he lists the qualities he believes are needed for those who would advance in business. In spite of Mr. Kahn's statement that this is still a country of unlimited possibilities, from which it is inferred that there are unlimited possibilities for girls in business—and we know there are not except for the exceptional person—, his "message" is worth reading.

The first section tells how to choose, apply for, and hold a job. The writer's comments on why it is more difficult for college graduates to get started in business than high school girls, and on the age factor about which so much has been written by those who do not know facts, stimulate the reader's attention.

The chapter on the application blank and the use of tests, if read by the young and sometimes nervous applicant, should make the interview a much easier ordeal.

The second part surveys "What the present affords and what the future promises" in the major fields of finance, merchandizing, advertising, journalism, publicity, and publishing. A fair, though not exhaustive, picture is given of the opportunities in these fields. No illusory hopes are held out to the young beginner.

THE CASE-CONFERENCE PROBLEMS IN GROUP GUIDANCE

By Richard D. Allen. New York: Inor Publishing Co., 1933, 151 pp.

Reviewed by ROY N. ANDERSON, *Teachers College, Columbia University*

This book is published as Vol. II in the Inor Group-Guidance Series. A manual and casebook for class counselors in secondary schools, outlines the methods and procedures which a counselor might follow in organizing group discussion and group instruction on problems that have to do chiefly with social, moral and ethical situations. The technique of selecting and preparing cases has been worked out by counselors in the Providence schools. These principles are formulated for those who wish to develop their own cases in connection with their particular school program: The author also provides a series of worthwhile suggestions for conference leaders who desire to adopt the case-conference technique.

The greater part of the volume is given over to 52 specific problems for class discussion. Each case is treated in the following procedure:

- I. *Objectives*, statement of the objectives of the particular case.
- II. *References*, referring the reader to

related material in Vol. I and Vol. II.

- III. *Grades, groups, and situations to which it may apply.*
- IV. *The case*, the statement of the problem.
- V. *Issues involved.* The pertinent issues are put in the form of questions, to provide the point of departure for the discussion. They may be followed, or new issues may be substituted by the group.
- VI. *Summary and conclusions*, a discussion of how the class opinion develops.

The book offers an interesting procedure in conducting group discussions on problems that have no one right answer. It provides the reader with a technique of building up his own cases if those presented are not sufficient. It should be a valuable handbook for counselors in secondary schools, religious educators, and others interested in character education.

AIDS TO PSYCHOLOGICAL TESTING

PSYCHOLOGICAL TESTS, METHODS, AND RESULTS. By Henry E. Garrett and Matthew R. Schneek. New York: Harper, 1933, 235 pp., \$2.75

A BIBLIOGRAPHY OF MENTAL TESTS AND RATING SCALES. By Gertrude H. Hildreth. New York: Psychological Corporation, 1933, 242 pp., \$3.00

Psychological Tests, Methods, and Results, the latest book in Harper's excellent new psychological series under the general editorship of Gardner Murphy, may be used either as a text in mental testing or as a reference manual. Hundreds of tests, designed to measure a wide variety of simple and complex functions, are fully described. In each case the use, validity, and reliability of the test are discussed, and methods of administering and scoring, as well as full bibliographical data, are given. Part One, which is devoted to "measurement of simpler functions," deals with tests of physical and sensory capacity, motor ability, mechanical aptitude, perception, attention, learning, association, and memory. Tests designed to measure "complex functions" are described in Part Two: verbal or linguistic tests of "general intelligence," performance and non-language tests of general mental ability; tests of personality and temperament; and tests in special fields. Although personnel men interested in aptitude prognosis may regret that these last "tests in special fields" were not covered more fully, the general high quality and utility of the book should lead them to restrain complaint.

The Psychological Corporation has per-

formed a real service in publishing Dr. Hildreth's comprehensive *Bibliography of Mental Tests and Rating Scales*. This is of course narrower in design than the Garrett and Schneek book, pretending to be no more than a bibliography, but it is far wider in the number of tests covered. It seems as if no test ever developed in America has been omitted, and many foreign ones are included. The vast number of references are classified under the following general headings: (1) Intelligence and mental processes; (2) Educational and scholastic aptitude and achievement; (3) Personality tests and rating scales; (4) Vocational aptitude, skills and achievement.

The rapid increase in recent years in the number of available tests and rating scales has greatly improved the facilities of psychologists and research workers in education and industry, but this increase has also made more difficult the task of locating available materials within a given field. The problem of locating a specific test item is often a baffling one. This comprehensive list of tests and rating scales is therefore well-nigh indispensable for research workers in the testing field. Subject, author, and test title indexes facilitate the search for any particular item.

HUMAN NATURE AND MANAGEMENT (Second Edition). By Ordway Tead. New York: McGraw-Hill, 1933, 338 pp., \$3.50.

The most important change in the revision of Mr. Tead's very useful psychology of management is the addition of a large number of stimulating questions and genuine case problems. "The objective here is primarily the stimulation of clear thinking and the cultivation of a broad, liberal and humane attitude of attack on problems of human relations."

FURTHER CONTRIBUTIONS TO THE PRESTIGE VALUE OF PUBLIC EMPLOYMENT. By Leonard D. White. Chicago: Univ. of Chicago Press, 1932, 88 pp., \$1.50.

An experiment similar to the one here described was conducted in Chicago five years ago. It is interesting to find that the earlier conclusions are confirmed on a national scale as well as locally, although the results are somewhat more favorable to officialdom nationally than those secured at Chicago in 1927. The prestige index becomes more positive and more friendly to

public employees. It is found, however, that opinion on matters of efficiency, honesty and courtesy, and other criteria of judgment is against public employees to about the same degree for the nation as was found for Chicago. The nature and uses of prestige are treated in the final chapter. A great number of tables and illustrations are included.

THE NATIONAL INDUSTRIAL RECOVERY ACT: AN ANALYSIS. By Benjamin S. Kirsh. New York: Central Book Co., 1933, 156 pp., \$2.50.

This practical discussion of the industrial control provisions of the National Recovery Act is divided into three phases: (1) the necessity for the Act, (2) explanation of the Act, and (3) observations on the implications of the Act. The author takes the view that "The law is at once a combination answer to the growing demand for revision of the federal anti-trust laws, and a protection to labor interests against exploitation by long hours and starvation wages on the part of unscrupulous employers."

Included in the explanation is a skeleton outline, which gives briefly a composite view of the Act, and to which the reader can turn for ready reference.

This volume supplements the author's earlier and more complete *Trade Associations, the Legal Aspects*, dealing with trade associations under the Sherman Law.

THE INCOMES OF PHYSICIANS. By Maurice Leven. Chicago: Univ. of Chicago Press, 1933, 135 pp., \$2.00.

Of the \$3,500,000,000 spent yearly on medical care by the American people, nearly half is paid to physicians, dentists, and other licensed practitioners. This volume, Publication 24 of the Committee on the Costs of Medical Care, analyzes the distribution of physicians' share of that vast sum. The average net income of physicians is estimated to have been \$5,300 in 1929, while \$1,800 is the figure estimated for the work population as a whole. The incomes are acknowledged to be adequate to bring forth and maintain the required supply of properly qualified physicians,

but this criterion of adequacy is sharply questioned.

PROPAGANDA AND EDUCATION. By William W. Biddle. New York: Bureau of Publications, Teachers College, Columbia Univ., 1932, 84 pp., \$1.50.

This study, concerned with college and high school students, develops experimentally a method by which students can be made more critical, less susceptible to emotional persuasive devices. Education for critical and discriminative thinking is desirable as a bulwark against the dangers of propaganda.

Appendices contain statistical tabulation of results.

As a beginning for similar experiments, and for calling attention to the need for further work, the present experiment has even more value than is attached to its specific attainment.

DEVELOPING ATTITUDES IN CHILDREN. Chicago: Univ. of Chicago Press, 1933, 156 pp., \$1.50.

Addresses made at a conference on developing attitudes in children make up this book. Such questions as: What attitudes are being developed in children? What attitudes should be developed? How can they be developed? are discussed by a group of authorities including Harry Elmer Barnes, Glenn Frank, Hugh Hartshorne and Ruth Peterson.

RURAL SOCIAL TRENDS. By Edmund de S. Brunner and J. H. Kolb. New York: McGraw-Hill, 1933, 386 pp., \$4.00.

This volume is one of a series of monographs embodying scientific information assembled for the use of the President's Research Committee on Social Trends in the preparation of its report entitled *Recent Social Trends in the United States*. The two types of data used—United States census material, and studies carried on by trained investigators sent into 140 agricultural village communities—restrict it to the field of objective analysis. Trends in rural population, education, government, and other factors are described. Appendices

contain history and methodology of the study. The value of these data lies not only in the facts brought to light, but in the assistance and the impetus to study trends along other lines and in other localities.

THE GREAT TECHNOLOGY. By Harold Rugg. New York: John Day, 1933, 308 pp., \$2.50.

The promise on the cover of this volume that it is *not* a book on technocracy lifts it at once from the class of the recent sensation-seeking productions taking advantage of the interest of the moment. Treating first the history of modern industrial society, the author then proceeds to analyze the "deeper-lying issues"—which incidentally do not all agree with the issues as stated by some politicians, captains of industry and their associates—and attempts a fundamental understanding of them. The present upheaval is termed the Second Industrial Revolution, and treatment of it, accordingly, as ushering in a new epoch is considered. The new epoch, if the right course is followed, may become the Great Technology in which mankind develops for itself a magnificent creative living. The

alternative is unemployment, starvation, violence—social chaos.

INDUSTRY AND SOCIETY. By Arthur J. Todd. New York: Henry Holt, 1933, 626 pp., \$3.75.

This is a penetrating factual analysis of the place of industrialism in, and its effects on, society. The text divides itself into five major parts: First, the detailed indictment of modern industrialism, by various critics; second, a brief review of the socio-historical aspects of the Machine Age, third, a view of the impact of industrialism upon the Far East, in order to determine whether certain stigmata of capitalistic machine industry are inherently necessary; fourth, a detailed study of certain social problems, such as wages, unemployment, insecurity, health and education, to discover if possible any causal connection between them and industry as such; finally, the wider implications of the Machine Age are examined, together, with proposed antidotes and remedies for its alleged "evils." The author urges no single recipe or formula for social salvation. Readers will have to decide which kind of salvation they want, if any.

New Books

ADOLESCENT PSYCHOLOGY. By Ada H. Arlitt. New York: American Book, 1933, 256 pp., \$2.25.

COMMON SENSE ABOUT MACHINES AND UNEMPLOYMENT. By Morris P. Taylor. Phila.: Winston, 1933, 178 pp., \$1.50.

COMPENSATION IN THE PROFESSIONS. By Lester W. Bartlett and Mildred B. Neel. New York: Association Press, 1933, 204 pp., \$2.00.

DO COLLEGE STUDENTS CHOOSE VOCATIONS WISELY? By Edward J. Sparling. New York: Teachers Coll., Columbia Univ., 1933, 115 pp., \$1.50.

LABOR ECONOMICS AND LABOR PROBLEMS. By Dale Yoder. New York: McGraw-Hill, 1933, 640 pp., \$3.50.

LABOR RELATIONS UNDER THE RECOVERY ACT. By Ordway Tead and Henry C.

Metcalf. New York: Whittlesey House, McGraw-Hill, 1933, 271 pp., \$2.00.

METHODS OF STATISTICAL ANALYSIS. By George R. Davies and Walter F. Crowder. New York: Wiley, 1933, 355 pp., \$3.25.

PRINCIPLES OF INDUSTRIAL ORGANIZATION. By Dexter S. Kimball. New York: McGraw-Hill, 1933, 477 pp., \$4.00.

PSYCHOLOGICAL TESTS, METHODS, AND RESULTS. By Henry E. Garrett and Matthew M. Rupperecht. New York: Harper, 1933, 382 pp., \$2.75.

PSYCHOLOGY AND THE NEW EDUCATION. By Sidney L. Pressey. New York: Harper, 1933, 625 pp., \$2.25.

VOCATIONS FOR WOMEN. By Adah Peirce. New York: Macmillan, 1933, 345 pp., \$2.00.

Current Periodicals

PREPARED BY LINDA H. MORLEY, *Industrial Relations Counselors, Inc.*

BARTER

United States. Labor Statistics Bureau. Coöperative self-help activities among the unemployed—general summary. *Monthly Labor Review*, June, 1933, vol. 36, p. 1229-1240.

Outlines briefly types of organizations and services rendered. Discusses the problems involved: providing employment, raising a small amount of cash, adopting a medium of exchange, etc.

A summary of individual reports on each of the self-help bureaus previously published in the *Monthly Labor Review*.

BUDGETS AND COST OF LIVING

MUDGETT, BRUCE D. Problem of the representative budget in a cost of living index. *Journal of the American Statistical Association, Supplement*, Mar. 1933, vol. 27, p. 26-32.

Believes that the food budget of the U. S. Bureau of Labor Statistics index should be revised, and that the food lists should be extended to include a greater representation of fruits and vegetables. Suggests additions to the clothing budget, especially in the National Industrial Conference Board index (which includes no children's clothing), and additions to the sundries budget to include such items as meals outside of the home, life insurance and savings, and automobile expenditures.

TOUGH, EVELYN G., AND E. L. KIRKPATRICK. Scales for measuring the standard of living. *Journal of the American Statistical Association*, Mar. 1933, vol. 28, p. 55-63.

Considers development, application and

adequacy of the three sets of scales which have been used for comparing the cost of living in different family units, allowing for factors of sex, age and size of family.

HEALTH

United States—Public Health Service. Sickness among male industrial employees during the second quarter of 1932, by Dean K. Brundage, Statistician, Office of Industrial Hygiene and Sanitation, United States Public Health Service. *Public Health Reports*, Nov. 25, 1932, vol. 47, p. 2219-2221.

Records cover about 134,000 employed men. Table gives statistics showing frequency of disability lasting eight calendar days or longer in the second quarter of 1932, compared with same quarter for 1931, 1930 and 1929 (male morbidity experience of 29 industrial establishments which reported their cases to the United States Public Health Service during all four years).

INDUSTRIAL RELATIONS

WESTING, RALPH S. (Manager, Industrial Relations Department, Young and Ottley, Inc.). Employees' reserve funds as viewed by an organization which without preconceived ideas, bias or prejudice, has studied every available plan bearing on the varied aspects of financial welfare and protection of American workers. *Industrial Relations*, Nov.-Dec., 1932, vol. 3, p. 531-534.

Describes system of flexible reserves built up by coöperation of employer and employee to take care of the following emergencies: death (covered by flat amount of life insurance for each worker); illness, accident, death of dependent (worker may apply for loan); unemployment

ment (payment to be made out of "special emergency fund" kept within the fund itself); and, old age (reserve to be available to purchase annuity or make an investment). Suggests successful investment managers for management of these employee reserve funds, which have been built up by payroll deductions and amounts added by employers.

INTERNATIONAL LABOR ORGANIZATION

WILSON, FRANCIS G. (Associate Professor of Political Science, University of Washington). Enforcement of international labor standards. *Annals of the Academy of Political and Social Science*, Mar. 1933, vol. 165, p. 95-101.

Describes types of control developed during the fourteen years of existence of the International Labor Organization in order to have states not only ratify the International Labor Conventions, but accept the obligation to live up to them. The machinery for enforcement is judicial and political, and includes treaty provisions, review of reports, and pressure brought by workers.

MACHINERY IN INDUSTRY

KING, WILLFORD I. Relative volume of technological unemployment. *Journal of the American Statistical Association, Supplement*, Mar. 1933, vol. 27, p. 33-39.

Believes there is nothing in statistical evidence now available to indicate that new inventions are not still continuing to benefit labor. Thinks evils resulting from unsound monetary system should not be blamed on technological improvements in methods of production. "Unless the prices of the products of industry rise, unemployment is likely to continue until wages are adjusted downward to an extent approximately equal to the fall in the price level."

STERN, BORIS. Technological displacement of labor and technological unemployment. *Journal of the American Statistical Association, Supplement*, Mar. 1933, vol. 27, p. 42-47.

Examines in detail the effect of increased output per unit of labor time, and in-

creased total production on the employment situation in the tire industry, using statistics published in the December Monthly Labor Review of a survey made by the Labor Department covering 59.8 per cent of entire tire industry plants. Results showed that at least 70.5 per cent of those lost their jobs because of labor surplus and technological unemployment.

United States. Labor Statistics Bureau. Technological changes and employment in the electric-lamp industry. *Monthly Labor Review*, June 1933, vol. 36, p. 1213-1228.

The most important technical change affecting the number of workers employed during the years 1920 to 1931, occurred in the lamp assembly plants where a decline in employment was estimated at 68 per cent while labor productivity increased from a base of 100 in 1929 to 438.9 in 1931. Article gives detailed description of changes and effects on production. Statistical data are included in tabular form.

MINIMUM WAGE

United States. Labor Statistics Bureau. Minimum-wage laws of New Hampshire, New Jersey, New York and Utah. *Monthly Labor Review*, June, 1933, vol. 36, p. 1259-1276.

Gives complete texts of laws passed in New Hampshire, New Jersey, New York and Utah. The first three are based upon standard minimum-wage bill sponsored by the National Consumers' League, which does not attempt to regulate wages generally. The Utah law is similar to the California one, where the industrial commission is empowered to ascertain the wages paid.

NATIONAL OCCUPATIONAL CONFERENCE

National Occupational Conference. A conference in conference, story of NOC. *Occupations*, June, 1933, vol. 12, p. 31-48.

National Occupational Conference is a cooperative effort to help those engaged in counseling, in personnel work, or in dealing professionally with any of the problems of occupational adjustment; to

serve as a clearing house for information, gathering and distributing information which now exists; making new surveys and developing new research projects. The conference is administered by the American Association for Adult Education. An outline is given of the extended program planned, including publications. Suggests co-ordinating their activities with other agencies in gathering information on such items as: occupational trends, occupational opportunities, methods by which workers have succeeded in accomplishing transfer from one occupation to another, data on technological changes, trade union practices, etc.

PSYCHOLOGY

FRISBY, C. B. (National Institute of Industrial Psychology). Psychology applied to organization. *Human Factor*, June, 1933, vol. 7, p. 224-231.

Shows how employees are directly affected in an organization by lack of co-ordination between departments, defective system for control of production, lack of consideration of mental and physical powers of the workers, etc. Gives numerous first-hand examples.

TEAD, ORDWAY (Editor, Business Books, Harper & Bros.). Six unsolved problems—in connection with which a psychologist looks at personnel management. *Industrial Relations*, Dec. 31, 1932, vol. 3, p. 667-670.

Discusses, from a psychological viewpoint, the problems of security, training, leadership, representation of group interests, clarifying of objectives and creating a partnership relation. Believes the major duty of personnel executives is to help find how industry can supply the right kind of surrounding conditions and attractive aims.

RATING

RAPHAEL, WINIFRED SPIELMAN (Superintendent, Personnel Section, National Institute of Industrial Psychology). Efficiency of efficiency rating systems. *Human Factor*, June, 1933, vol. 7, p. 201-211.

Discusses the use of rating systems in selection of new employees, and in determining the efficiency of older employees for transfer, promotion, etc. Describes the four main types of rating systems: numerical and descriptive scales, graphic scale, and group rating. Believes the essential value of any rating scale is in making the rater look for individual qualities of each person, from which he can judge his general value in his present position, and his probable value in the position to which he will be promoted.

RESEARCH

TOWSEN, JAMES W. (Industrial Relations Counselors, Inc.). Co-ordinating personnel research, and the possibilities of another organization therefor. *Industrial Relations*, Dec. 31, 1932, vol. 3, p. 713-716.

Outlines history, functions and publications of the Personnel Research Federation, Inc., the Business Research Council and the Social Science Research Council. Describes the studies devoted to personnel research issued by the departments of the federal government, and by some state and municipal governments. Believes that greater use of the agencies by personnel executives in industry would tend to bring about better co-ordination.

VERNON, H. M. Recent Japanese research in industrial physiology and psychology. *Human Factor*, May, 1933, vol. 7, p. 178-180.

A summary of several research activities carried on by the Institute for the Science of Labour. The information relates mainly to women workers in the cotton industry. Investigations were made to determine effect of day and night shifts, fatigue and reaction times, illness, etc.

SAVINGS

WATKINS, G. P. (Washington, D. C.). Economics of saving. *American Economic Review*, Mar., 1933, vol. 23, p. 61-81.

Author calls attention to the importance in national economy of the less commercial forms of saving, such as reserves, durable consumption goods, capital goods yielding

a pecuniary income, and, also, endeavors to show "crudity of current arguments that everybody should spend more freely." Discusses precedence and proportion in saving, socio-economic importance of saving for consumption, and maladjustments from irregularities in the flow of spending and saving.

UNEMPLOYMENT INSURANCE

RUBINOW, I. M. Toward unemployment insurance. *Current History*, June, 1933, vol. 38, p. 308-315.

Outlines history of job insurance agitation in America, and describes the provisions of the Wisconsin and Ohio plans.

Believes many employers, legislators and the general public are influenced by arguments presented that the difficulties involved in inaugurating a system during a depression period would be too great and that the problem of interstate competition would be serious if all states were not subject to this change.

VOCATIONAL GUIDANCE

WILLIAMS, WHITING. School, and factory. *Occupations*, June, 1933, vol. 12, p. 11-15.

During his years of intimate contact with laborers and the unemployed, Mr. Williams has learned the "difference in the satisfactions of a career built on craft and one built on nothing but sheer back and shoulder muscle power." Gives advice to the boys and girls in school that the greatest joy of living is the joy of individual worthwhileness, won through the performance of useful work, which is in turn dependent upon degree of proficiency developed, dependableness, and moral responsibility.

WAGES

National Industrial Conference Board, Inc. Tables relating to wages in the United States, 1932. *Supplement to Conference Board Service Letter*, Apr. 1933, p. 1-8.

"Annual issue of the National Industrial Conference Board on 'Wages in the

United States' is replaced for 1932 by the tables of this supplement, which continue tabular matter previously published." Tables include earnings, hours, employment for all wage earners and for classified labor groups in 25 manufacturing industries; payroll data for all wage earners, classified in labor groups and by industry; indexes of employment for all wage earners by manufacturing industry; changes in total man-hours; wage rates (farm labor); wage rates per hour (building trades); employment, earnings and hours (railroads); and average hours and earnings (gas and electricity production).

WELCH, EMMETT H. Relationship between wage rates and unemployment. *Journal of the American Statistical Association, Supplement*. Mar. 1933, vol. 27, p. 5458.

"Data which have been presented . . . warrant a tentative conclusion that we are suffering from a breakdown in markets, of which the domestic market is an important part, and no boot-strap effort whereby we would seek to expand production at the expense of consumer purchasing power is likely to prove effective as a means of sound economic revival."

WOLMAN, LEO. Wages during the depression. *National Bureau of Economic Research Bulletin*, No. 46, May 1, 1933, p. 1-5.

Gives average per capita weekly earnings, 1929 and 1932, with percentage change for these years, in manufacturing, public utilities, railroads, mining, retail and wholesale trade; also hourly earnings in manufacturing, coal and rail groups. The hourly rates for common labor in road building fell 18 per cent from 1929 to 1932. In December, 1932, the hourly earnings varied from 22 cents an hour in cotton goods to 76 cents an hour in newspaper printing. Weekly and hourly earnings in manufacturing suffered greater decline in this depression than in 1920, but in the public utilities group and in wholesale and retail trade the reductions have not been as great.

The Prediction of Vocational Success¹

BY IRVING LORGE, *Institute of Educational Research, Teachers College,
Columbia University*

A notable ten-year research by Professor Thorndike and his colleagues is here summarized by Dr. Lorge who had an important share in following up the subsequent histories, in school and on the job, of 2500 youngsters who were examined twelve years ago. Age-grade data, scholarship records, test results, forecast educational accomplishment much better than they predict success in clerical occupations; while with measures of job success in mechanical pursuits the correlations are practically zero. Some of the more disappointing conclusions from the facts revealed challenge research workers in psychology and guidance to develop better criteria of occupational success, as well as more searching and precise measures of general and specific talents.

Twenty-five hundred persons have been followed up since 1921-22 when they were examined, in order to ascertain to what extent tests of intellect, clerical ability or mechanical adroitness at age fourteen, or measures of school adjustment up to that age are predictive of later educational progress and ultimately of vocational success. While it was found possible to predict later scholastic success with accuracy, correlations between measurements made at age fourteen and earnings, level of job and interest in work eight years later were very low, being particularly insignificant in the case of those children who went into mechanical work.

WHEN Thales was asked what was difficult, he said "To know one's self." And what was easy, "To advise another." Knowledge is difficult, whether about one's self or about another. The implication of Thales' opinion, however, is

that advice is easy since no attempt to use knowledge is made. The professional counselor would dissent from any opinion implying the ease of advising. When guidance is well done, it is based upon information—information difficult to obtain, to evaluate, and to use.

Psychology has helped, in no small measure, in developing techniques for obtaining information and for evaluating such information about persons to be counseled. Guidance, or the use of information, in terms of prophecies and recommendations has, how-

¹ This is a selection of material from the major study by this name made by Edward L. Thorndike and Elsie O. Bregman, Irving Lorge, Zaida F. Metcalfe, Eleanor E. Robinson and Ella Woodyard under grants from the Commonwealth Fund and the Carnegie Corporation. Complete report of the investigation is now in press.

ever, been dependent more upon the sagacity, upon the experience and upon the shrewdness of the counselor, than upon knowledge.

Granted that information concerning a person's abilities can be obtained, what value does it have for guidance? To answer this question, the Division of Educational Psychology of the Institute of Educational Research at Teachers College, Columbia University was commissioned by the Commonwealth Fund to investigate the possibilities of guidance at about age fourteen on the basis of the child's school record and psychological tests. The study was supervised by Dr. Edward L. Thorndike, who set the problem to ascertain if tests of intellect, clerical ability or mechanical adroitness at age 14.0, or measures of school adjustment up to age 14.0 are in any measure predictive of later educational history and ultimately of vocational success and adjustment.

More than twenty-five hundred boys and girls in New York City elementary schools were tested in 1921-2 with tests of intellect, clerical ability and mechanical adroitness. For these same individuals, measures of school adjustment were computed. Except for rare mishaps, there is available for each person, a record of age at the time of test, the rate of progress in school, the average conduct, the average school achievement, the average attendance, in addition to test records in arithmetic, reading, clerical abilities, mechanical adroitness.

These records were converted by adequate statistical procedures to the most probable scores at age 14.0.

The procedures are simple, sound, and the results very nearly as good for any matter of guidance as the results of tests actually given at age 14.0 would be.

All these individuals were followed up for their subsequent educational and vocational history. These histories were taken over a period of more than ten years by personal interviews, telephone conversations and by letter. Complete school and work records were taken for more than two thousand of the tested individuals, despite the difficulties of keeping in touch with individuals in metropolitan New York. Families in New York City change their homes and their schools often. Their immediate neighbors may be unacquainted with them, much less with what happened to them. They not infrequently change their names! Consequently the task of maintaining contact with a boy or girl for more than eight years is hard, enormously harder than it would be in cities of moderate size. After the pupil leaves school the difficulty increases. Yet for more than two thousand individuals, the facts of later educational and vocational histories have been recorded.

In the educational history, such facts as age at leaving school permanently, the grade reached upon leaving school, the rate of progress in school from the time of test to the time of leaving school permanently, scholarship, and educational success (a weighted composite of grade reached, rate of progress, and scholarship), are recorded.

In the vocational history, a complete record for each job includes the

description of job, length of time employed, job satisfaction, level of position, salary earned.

With the data about a person's educational adjustment, and abilities at age 14.0 and his subsequent educational adjustment and vocational success up to age 22.0, the Institute attempted to answer the question: What is the significance of the early school record and test scores for prediction and guidance?

If we know nothing whatsoever about two boys save that one has reached the last quarter of Grade 8B in New York City at age 12.0, whereas the other has reached the same point at age 16.0, what can we infer about his educational career thereafter and his vocational status at age 21.0? What is the significance for later life of the age at which a certain educational level is reached? If we know nothing whatsoever about two boys, both in 8B, save that at age 14.0 one scored 50 in a test in solving arithmetical problems and comprehending paragraphs, whereas the other at the same age scored 100, what can we infer about their later careers? What is the significance in later life of the intelligence test-score attained in one's early teens? These are samples of the questions we are to answer.

The first step to the use of facts in guidance is to know their significance, their predictive value. The right use of a fact in guidance depends partly on other things than its significance, but it always depends upon that. In particular, if the score made in the test in assembling a clothes pin or paper clip, a chain, bicycle bell, etc., does not signify anything about

how rapidly the boy will advance in school, or how well he will do in high school, or how much he will earn in a mechanical job, or how well he will like that job, or any of the other features of his career that we have recorded, it is presumably useless as a means of guidance.

The Institute measured the significance of each of the facts found at the time of the test for each of the features of the educational career after age 14.0 and for each of the features of the vocational career after age 14.0. The method used is that of correlation. The relationship between each fact as of age 14.0 and each fact concerning the subsequent educational and vocational career was computed. Some 600 such relationships were computed.

For each person, the future educational career was measured by

Item 18. Grade reached before leaving school

Item 19. Rate of progress in school from time of the test to the time of leaving school

Item 20. Scholarship in years following tests

Item 21. A weighted composite of Items 18, 19 and 20

At age 14.0, we have two measures of school progress:

Item 2a or 2r. The grade reached, or the age at which the individual reached 8B reversed to measure youngness

Item 10. The number of half-years gained

The average correlations are

with Item	18	19	20	21
Item 2a or 2r.	.67	.13	.25	.36
Item 10. ....	.54	.19	.27	.36

Also, at age 14.0, we have two measures of teachers' opinion:

- Item 11. The average "conduct" mark
 Item 12. The average "work" mark,
 or scholarship

The average correlation of these psychological measures and the future educational career are:

with Item	18	19	20	21
Item 11.....	.31	.18	.24	.27
Item 12.....	.50	.40	.38	.45

In addition, the test records yield several measures

- Item 3. The score of the Clerical Intelligence Test
 Item 9. The weighted composite score on The Thorndike-McCall Reading Scale and an Arithmetic Test

The average correlations of these items of teacher evaluation and future educational career are:

with Item	18	19	20	21
Item 3.....	.55	.22	.34	.40
Item 9.....	.53	.22	.34	.39

These correlations reveal that the score in a test of an hour or less, which can be given to a hundred children at once, predicts future educational success better than the progress record of approximately eight years in school, and nearly as well as the opinions of past teachers concerning conduct or ability. This fact is not only of great importance for theories of guidance, but also of immediate and wide practical utility. Such a test can be given anywhere at any time with strictly comparable results. Such a long past record of teachers' marks as we have used is hard, and often impossible, to obtain; and the standards of different school-systems vary so much

that the predictive value when children from different school systems are compared will be lower than that found by us, and will occasionally be grossly misleading.

It may be, however, that some ingenious combination of progress, scholarship, conduct and attendance will provide a much better prophecy than any one of them alone, and possibly a much better prophecy than the intelligence test score. It may also be that a combination of some of the facts of the past educational history with the intelligence score may provide a still better prophecy.

We have attempted this. The general outcome is that the age-grade status (Item 2a or 2r), the intelligence test score (Item 9 or 3, or 3+9), and the average scholarship mark (Item 12) monopolize the predictive value of the school records and test scores. Whatever significance all the other facts obtained at age 14.0 have, is indirectly due to their determination in part by the facts that determine age-grade status, intelligence or scholarship.

Any counselor can obtain the age-grade status (Item 2a or 2r) from a boy or girl in 5 seconds and verify the statement by a letter that requires only a minute to write. He can obtain an intelligence score as good as Item 3 + Item 9 at small expense of time and money. It is useful for purposes other than educational guidance.

The grade that will be reached before the pupil leaves school can be prophesied only a very little better by the best combination of all the items in the school record than by the age at which grade 8B is reached, or

the grade reached at age 14.0. Such a measure of age-grade status will have a correlation of .60 to .70 with the grade the person will reach before leaving school. Nor does the inclusion of the intelligence score benefit the prophecy substantially. In the case of our data the best multiple correlation is only .02 higher than the correlation by Item 2 or 2a alone. Since an individual's age-grade status is a fact of record in every school system, and is perfectly well known to the individual himself, the practical procedure for a vocational counselor is to make his prophecy of the grade which the pupil will reach before leaving school by combining this fact about age-grade status with such knowledge as is available of the economic status and ambitions of the family and of the tastes and desires of the individual.

It is probable that if these latter can be assigned proper weight, the prediction of grade reached will be to an extent of $r = .90$ or higher. Grade reached is accounted for to an extent of $r = .96$ by Item 2 and Item 16; and Item 18 (age of leaving school) should be predicted fairly closely by these factors of economic status and interest plus factors already counted in Item 2.

From the age-grade status and the intelligence test score the counselor can predict the average scholarship that will be displayed later with an r of approximately .36. If he can obtain also a fairly reliable measure of past success in school studies, he can raise the latter prediction to .42 by combining the intelligence score and this school mark with proper relative

weights. If he can be sure that the scholarship measures are as reliable as those obtained in this study, he can, so far as educational guidance is concerned, use them instead of intelligence scores. Item 12 alone has a correlation of .38 with Item 20 in our group.

PREDICTING VOCATIONAL SUCCESS

In determining the predictive value of each item at age 14.0 for vocational success, we have the following measures of vocational success from age 20.0 to 22.0.

Item 22. Earnings per year corrected for cost of living, general salary level, and chances for employment

Item 23. Average level of job or responsibility

Item 24. Average satisfaction with job

The average correlations between the following facts known at age 14.0 and the three measures of success at age 20.0 are reported in Table 1.

Item 2r, 2 reversed, i.e., with the signs changed when measures are expressed as divergences from the average

Item 2a. Grade reached at 14.0

Item 3. Score at 14.0 in test of clerical intelligence (C1)

Item 4. Score at 14.0 in a test of clerical activities (C2)

Item 5. Score at 14.0 in the Stenquist Assembly Test of mechanical adroitness

Item 6. Score at 14.0 in the I. E. R. test of mechanical adroitness for girls

Item 7. Score at 14.0 in a test in arithmetic problems

Item 8. Score at 14.0 in the Thorndike-McCall reading test

Item 9. Score at 14.0 in 7 + 8

Item 10. Progress in school up to the time of the test (10 + the number of half-years gained)

- Item 11. Average of conduct marks up to the time of the test
 Item 12. Average of scholarship marks up to the time of the test
 Item 13. Average attendance, expressed as 100 minus the average number of absences per half-year
 Item 16. Age at leaving school
 Item 18. Grade reached at leaving school

These correlations were computed for three different groups: For those whose work was entirely of a mechan-

20.0 to 22.0 hover around zero. The score on all measures of school adjustment to age 14.0, and on psychological tests are exceedingly low in predictive value. One of two things may be true. Either the qualities which are predictive of large earnings, high-level work and satisfaction in the job at mechanical work are very different from those which produce success in school and in tests of intelligence, or the individual's nature changes so that

TABLE 1

Average correlations between each item of school record and test scores and earnings, level of job, and interest in job. Ages 20.0 to 22.0

(Decimal points are omitted)

	2a or 2r	3	4	5 or 6	7	8	9	10	11	12	13	16	18
Mechanical work (n = 365):													
Earnings.....	10	01	09	10	08	06	08	06	-01	04	00	-06	07
Level of job.....	02	-02	01	14	-02	-01	-01	02	07	07	02	07	09
Interest.....	03	02	04	-07	05	04	06	00	-03	-03	-07	01	01
Mixed work (n = 305):													
Earnings.....	02	10	01	14	10	12	12	05	-09	04	-05	-06	04
Level of job.....	-02	07	02	11	09	10	10	01	-04	08	03	01	06
Interest.....	05	02	-04	11	08	-02	02	04	07	02	06	06	04
Clerical work (n = 470):													
Earnings.....	19	26	22	19	14	17	17	14	-07	11	00	-15	-01
Level of job.....	14	21	16	12	17	13	18	12	-05	13	-03	05	16
Interest.....	-01	10	08	04	06	01	04	01	-01	06	05	-02	-02

ical sort, such as assembling in a factory, repairing automobiles, etc.; for those whose work was entirely of a clerical sort, such as bookkeeping, keeping stock records, etc.; and for those whose work changed from mechanical to clerical or from clerical to mechanical during the period, or whose work was mixed such as factory foreman, who directed operations as well as did them.

The correlations for the group engaged at mechanical work at ages

the qualities which one possesses at 21 are not predictable from those which he possesses at 14; or both of these may be true.

In any case, no combination of the facts gathered by us at age 14.0 would have enabled a vocational counselor to foretell how well a boy or girl would do in mechanical work 6 to 8 years later, or how happy he would be at it. Estimating (somewhat optimistically) the prophecies for salary, work level and interest from

the best possible multiple regression equation as .14, .16, and .12, the judgments of the counselor would have had about 98 per cent as large errors as if he had made them by pure guess.

The facts for prediction of success at mixed work are very much like those for mechanical work, except that the intelligence test scores (3 and 9) show average correlations of .11 instead of .045 with earnings, and .085 instead of .045 with level. The correlations with success in school work, school conduct, and attendance are at or near zero.

Success at clerical work at age 21 is predicted relatively much better than success at mechanical work or mixed work, but still very inadequately in comparison with perfection.

Items 3, 4, 9 and 5 monopolize the predictive value of all the items in predicting clerical success. Item 3 predicts salary for boys in clerical jobs with a correlation of .21, for girls, .31. Items 4 and 9 and 5 or 6 raise the multiple correlation coefficient but .02 for either group.

Correlations were computed for measures of vocational success at age 18.0 to 20.0. In case of the three groups, the correlations average -.005 less than from age 20.0 to 22.0.

One important limitation of our work is the necessary exclusion of high levels of work save for a very few, because only a few attain them at age 20.0 to 22.0. School success and success in the tests may have different predictive values for responsible, executive, and supervisory activities than for subordinate and routine activities, just as we have found that

they have very different predictive values for clerical and for mechanical work.

In the case of mechanical workers, some will become executives, inspectors and foremen, and the like; some will acquire businesses of their own; some will become highly skilled craftsmen or artists. Progress to these levels in later years may correlate more closely with scholarship, intelligence, or mechanical skill than does the success attained at age 21. In the case of clerical workers, some will advance in office-work, some in selling, some in general managerial work, with or without ownership. Progress in each of these lines at later ages should be studied in relation to possible early symptoms. In the professions, and many special occupations also, the significance of the facts at 14 cannot be measured at 21. We must wait. Our work records do not include the boys and girls who went to colleges or professional schools. They will be an important fraction of professional and business careers. They will, however, be a small fraction numerically and will not in any case alter the correlations by any large amount.

It is our opinion that success from age 22 to 32 or 42 to 52 will be somewhat more in line with the test scores at age 14.0 than early success is. There are two contrary sets of forces. On the one hand, the individual's abilities and equipment are changed by the experiences of life so that, other things being equal, he is at 40 less like himself at 14 than he was at 21. On the other hand, the abilities measured by the tests may have more influence at higher levels, including professional

work, than in such work as is done at age 21. The ordinary view is that the former set of forces will be stronger than the latter; and we cannot disprove it. But certain general facts of psychology and the fact that the correlations are higher for age 20.0 to 22.0 than for age 18.0 to 20.0 incline us to believe that the latter may be the stronger.

On the whole, it is safe to infer that boys and girls who are above the average in any of our tests or any feature of school success will do relatively better at clerical work than at mechanical work. The latter pays smaller bonuses for excellence in these respects—at least up to age 22.0. It is the duller and less skilful and less scholarly who profit by choosing mechanical work.

A scientific basis for vocational guidance would consist in a set of regression equations, or tables made from them, whereby a person's probability of success in various lines of work under ordinary conditions could be determined from items of observable fact concerning him.

Success could be relative to the success of other individuals in the same line of work or relative to the individual's success in other lines of work according as the information was primarily to guide employers, or primarily to guide workers.

We have taken as the commonest and most important vocational decision which a boy or girl has to make at or near 14, "Shall I engage in clerical or mechanical work after I leave school?" We have found that the best prediction obtainable from items 2 to 15 of school record and test scores is

.23 for boys and .33 for girls for success at age 20.0 to 22.0 for clerical work, and little above zero for mechanical work. If the promising measures of interest, honesty, cooperativeness, persistence and other aspects of human nature and behavior provided by Strong, Hartshorne and May, Moss, Moore, and others had been available then, our predictions might have been improved, nobody knows how much.

We have proved that the predictions are better for age 20 to 22 than for age 18 to 20, and so may hope that the prediction for later years may be better still.

On the whole, the vocational histories of these boys and girls are not in accord with the opinions of those enthusiasts for vocational guidance who assume that an examination of a boy or girl of fourteen and a study of his school record will enable a counselor to estimate his fitness to succeed in this, that, and the other sort of work.

Vocational counselors of a certain type would use a superior record for conduct in school as evidence that the boy would be cooperative and dependable at work, a superior attendance record as evidence that he would be faithful and regular at work, rapid progress in school as evidence that he would be ambitious and eager to learn in business, and the like. They would accept the school records, the test scores and their personal impressions of a boy or girl of fourteen or fifteen at par as indexes of his future behavior as a worker.

Better predictions than ours can come only from fuller or more suitable data than ours. Such data may consist of

objective facts about the child or the counselor's personal impressions of him. The value of the former must be ascertained by following the careers of persons as we have done, and finding the predictive value by correlations and multiple-regression equations. The value of the latter will depend upon the ability and experience of the counselor and can be ascertained for any given counselor or group of counselors only by following the careers of the persons rated. The experiences of counselors in general are more or less vitiated because they make no syste-

matic and adequate follow-up, and naturally hear from those persons who have done well and feel satisfied and grateful.

It is natural that counselors should feel confidence in their personal impressions. They would be less courageous and comfortable in their work if they did not. Probably many counselors will feel that if their personal impressions could have been added to the data about these boys and girls the predictions would have been markedly improved. But this has never been proved.

Occupational Distribution—Past and Future

By CHARLES S. SLOCOMBE, *Personnel Research Federation*

IN THE last four years five million young people have sought to enter the ranks of the gainfully occupied. Two-thirds of them have succeeded. Three million of those who have left school and college during the depression have found jobs. Was this because their preparatory training and chosen vocations were better suited to the needs of the times? Is the lack of demand for the services of the remainder due to their choosing overcrowded or obsolescent occupations?

The Personnel Research Federation has been developing methods of research by which these questions can be answered. It has been studying occupational trends—how the work of the nation is distributed among the population, why in the course of time the distribution changes, and what opportunities for work there will be in the future. What are some of the findings of such a study?

PAST DECADES

In the twenty years from 1910 to 1930 there was an increase of ten million in the number of persons gainfully occupied. Of these, two million were concerned with the production of primary goods, farm products, minerals, etc., their preparation for consumption and their transporta-

tion to the final place of use. Thus, though an increased quantity of food-stuffs, raw materials and mining products were grown and extracted, made into an infinite variety of prepared foods, wearing apparel, furniture, automobiles, and so on, and all these things transported from their original source to their ultimate place of use, only a small increase in the number of workers was necessary. In actual fact an 86 per cent increase in the quantity of goods consumed by a 35 per cent greater population, was grown, made, and transported by but a 6 per cent increase in workers.

No less than five million people found employment in financing, selling and trading in these goods, and in managing and administering all the public and private business of the country. It was in these groups that the greatest increase in workers took place. The total number so occupied actually increased by 81 per cent.

While each ton of nails may now be made by fewer men, it takes just as many people to finance and supervise its manufacture, to keep accounts, to advertise and to sell it as it did twenty years ago. Now, many more barrels of nails are made, so many more managers, clerks, and salesmen are given employment. Administrators and traders have in fact increased in about

the same proportion as has the quantity of manufactured goods—administrators a little faster, traders somewhat slower.

Professional and personal service, librarians, teachers, nurses, barbers, cooks, and so on, has occupied three million additional people. This function has increased its numbers by 50 per cent while the population increase has been only 35 per cent. Longer schooling and college training, the growth of libraries to satisfy literary interests, a developing delight in being served by bootblacks, manicurists, and ushers, all have had their effects in adding to the numbers in this group of occupations.

In the twenty years before the depression the growth in the number of administrators and traders was much greater than the growth in population; those in the service occupations increased at a somewhat greater rate than the population; the workers concerned with the preparation and transportation of goods, increased at about the same rate as the population, and primary producers did so at a slower rate. What influences were at work to produce these changes in occupational distribution?

THE PAST AND FUTURE

The forgotten, short lived, but deep depression of 1921-22 had a tremendous effect on this development (see Figure 1).

Up to 1921, the number of wage earners was directly proportionate to the quantity of goods manufactured; as the latter grew so did the former. During the two years of depression both decreased. When the expansion

in production took place, the number of workers did not increase nearly so fast. It was at this time that the amount of labor per unit of production started its serious decline, and the close relationship between the number of wage earners and quantity of goods was broken. The divergence between these two lines of development slowed up after 1925.

Wage earners are those who actually make or tend the machines which make goods. What happened to the people who plan, and supervise their work, who keep the accounts and records—the so-called salaried employees? Up to 1921 these administrators, as they may be called, had been increasing tremendously, and out of all proportion to the amount of business. When the decline set in their numbers were reduced, even more than the wage earners. This function was thus brought into direct relationship with the quantity of goods—and up to 1929 the number of salaried employees continued to increase just at the same rate as the volume of production.

What is going to happen this time? Will the effects be similar?

In the recent upturn of business everywhere it has been evident that the increases in employment of wage earners have not been nearly so great as the increases in volume. The stimulus to improve methods and reduce labor costs has been very great during the last four years—so that repetition of the 1921-22 effect is certain. This time, however, it is a matter of reduced man hours of labor per unit of production. The shortening of working hours per week is a new factor, which should offset the increased tend-

ency to divergence and bring the number of wage earners back more nearly into direct relationship with the quantity of production.

The latest report of the Interstate Commerce Commission on "Railroads"

charts show that the number of employees so occupied was directly proportionate to the volume of business. Since then white collared employees have not been laid off as fast as wage earners. The cuts have lagged, and

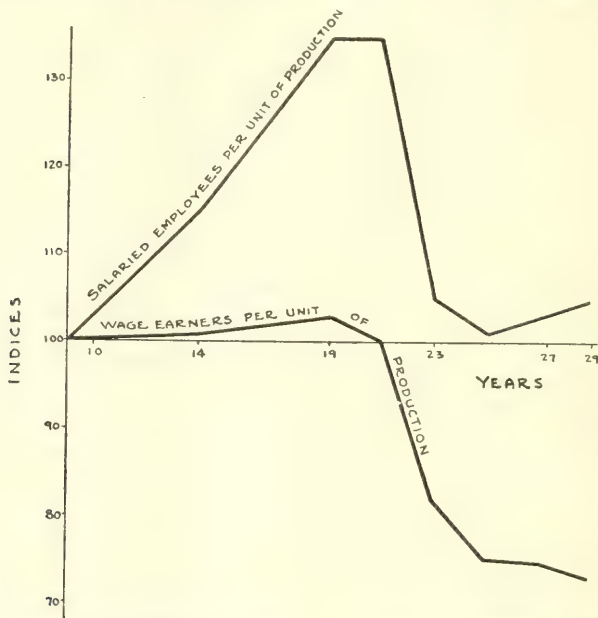


FIG. 1. AFTER 1921-22 A MARKED CHANGE TOOK PLACE IN THE RATIOS OF EMPLOYEES TO PRODUCTION

shows an expansion of car loadings, a smaller increase in wage earners, but a decline in the number of salaried employees. It has been stated that administration was in 1929 an inflated function, employing too many people and costing too much—that it must suffer deflation. This does not appear to be correct, for the

have not been so deep. However, as is shown in the Railway figures they are still taking place and may continue to do so.

The increase in the use of office appliances, systematization of clerical work, better selection of employees, and other such methods, have their effect in reducing the number within

the broad category, administration. So far this has not been very great. On the other hand the increasing complexities of organization and control, and the movement towards the shorter working week will tend to increase the size of this group in business. The growth in Federal, state and municipal control will also call for increased numbers of administrators and clerks. The

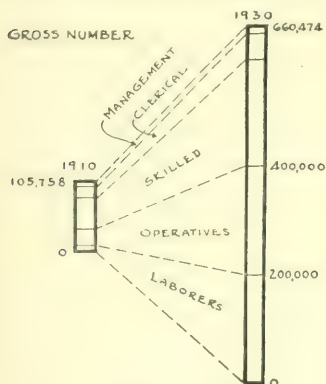


FIG. 2. NUMERICAL CHANGES IN OCCUPATIONAL DISTRIBUTION WITHIN THE RAPIDLY EXPANDING AUTOMOBILE INDUSTRY, 1910 TO 1930

number in trade, even with the growth of stores, mail order houses and such other large scale developments, has continued to be in direct proportion to the quantity of goods to be traded. There is no evidence yet of influences that will alter this relationship in a way which will reduce the size of this occupational group. In fact, all tendencies are in the opposite direction.

MORE DETAILED STUDIES

Administrators, wage earners, traders, represent broad classifications,

which have varied in their rate of growth or decline. Are finer divisions possible? If they are, what trends are apparent?

The automobile industry has developed tremendously in the last twenty years in the quantity of its products, in their quality and in the methods of manufacture. It was therefore studied with the expectation of finding great changes in the occupations and skills required. The number of cars and trucks manufactured was, at the end of 1929, over twenty

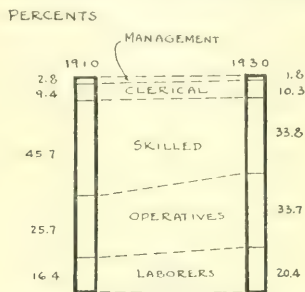


FIG. 3. CHANGES IN RELATIVE SIZE OF OCCUPATIONAL GROUPS IN THE AUTOMOBILE INDUSTRY, 1910 TO 1930

times as great as in 1909. The number of employees in all classes had grown from 105,758 to 640,474.

Figure 2 shows the distribution of these employees in 1910 and in 1930. Though the growth has been so great, the changes have been surprisingly small. Figure 3 shows these as percentages. Really the only alteration of note is the fact that skilled workers have declined from 45.7 per cent to 33.8 per cent of the total, while operatives and laborers have increased correspondingly. Standardization of product, the conveyor system of assembly, and all the other engineering improve-

ments had not been sufficient to dethrone the skilled worker from his position of major numerical importance.

Skilled workers increased from 44,100 to 177,000. What were the changes within this group? Figure 4 shows them. The relative proportions of toolmakers, mechanics and machinists are different, but otherwise the distribution of skills is much the same. It may be noted that the three occupations named all require the same basic training.

In a sense then it may be said that skilled work in automobile manufacture is declining slowly but that the skills required are very much of the same sort as they were twenty years ago.

Other types of business have been studied in the same way. Some have been growing, others have been declining. Each shows its own peculiarities—but in all the changes are slow and more gradual than would have been expected. There seems to be a regular cycle of development, each is in a different phase of this cycle, and the only question is how quick is the passage from one phase to the next. More recent developments in these trends are therefore being followed to determine the influence of current events upon rates of change.

Conclusions. In exploring the subject of occupational trends, the commonest approach has been to plot decennial census data. Few investigators have attempted the obvious next step of comparing their graphs with other data on occupational distribution found in the biennial census of manufactures, unemployment surveys, and employment (payroll)

statistics, in order to rectify and particularize the general lines of trend revealed. Nor have they systematically related trends to indices of the forces bringing about changed distribution of workers.

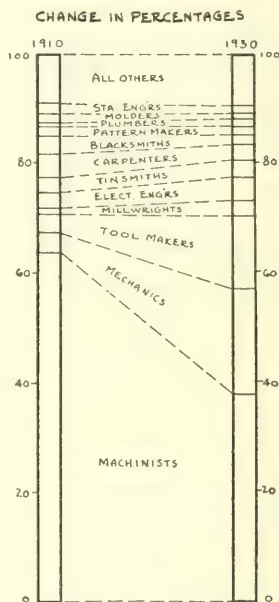


FIG. 4. CHANGES IN RELATIVE SIZE OF SKILLED OCCUPATIONS IN THE AUTOMOBILE INDUSTRY, 1910 TO 1930

Meanwhile others have been exploring for indices of the economic and industrial changes which alone can account for fluctuations in occupational distribution. Because their researches have in the main been directed toward the solution of problems of business and finance, the significance of their work

as an aid in occupational research has not been clearly indicated.

Occupational census figures when analyzed, supplemented, and corrected, furnish an extremely valuable point of departure for any investiga-

tion of trends. When they are correlated with data regarding the forces which bring about the changes observed, and checked by means of current information, reliable projections into the immediate future can be made.

A Junior English Vocabulary Test

BY JOHNSON O'CONNOR AND MARY E. FILLEY, *Stevens Institute of Technology*¹

Painstaking procedures of item analysis are indispensable in constructing a reliable mental measure.

This paper describes an English vocabulary test applicable from about fifth grade to first or second year high school. Designed for group administration, it parallels in form the English vocabulary test of college difficulty, Worksample 95. It has been administered to eight hundred persons and carefully revised on the basis of statistical study, the methods of which are described. Such a study reveals three types of weaknesses in the original test: first, the misleads are not always effective; second, they are sometimes too nearly like the correct synonym; and third, the correct choice is not always a sufficiently accurate synonym. In addition to correcting these three faults the test-words have been rearranged in order of difficulty.

IN 1923 Alexander Inglis devised and published an English vocabulary test of college difficulty. Each test word is printed in italics and incorporated in a short phrase, which is followed by five separate words each of which fits the phrase. One is a

synonym of the test word. The directions are: *Underline that one of the five choices which is nearest in meaning to the word in italics.* The performance is not timed. As an illustration, one item of form C reads:

A stinging *quip*. lash jest blow
pain insect

Three comparable forms,² A, B, and

¹ The original research which led to the discovery of the wide vocabulary of the successful executive was sponsored by the Committee on the Wertheim Fellowship, Harvard University. During the past four years, this research has been furthered at Stevens Institute of Technology by means of special funds contributed anonymously, a generous grant from the General Education Board of the Rockefeller Foundation, and a special gift from the Research Corporation.

Much of the statistical analysis has been made possible by a complete set of Hollereith sorting and tabulating equipment furnished by the International Business Machine Corporation. The necessary clerical work has been done by individuals assigned to us by the Emergency Work Bureau of the City of New York, the Professional Engineers Committee on Unem-

ployment, the American Society of Mechanical Engineers, and the Research Corporation.

² Forms A, B, and C, of the original Inglis test in which the items are arranged alphabetically can be purchased for school and industrial use from Ginn & Company, Boston. Forms A, B, and C of the revised test, in which the words are arranged in order of difficulty, and the Junior Vocabulary test described in this article, can be purchased for school and industrial use from the Bookstore, Stevens Institute of Technology, Hoboken, New Jersey. First revisions of forms D and E, in mimeograph form, are also available from the Bookstore.

C, are available with no italicized words in common. Three other forms, D, E, and F, are in process of construction. Each of the first three has been administered to one thousand persons and the results tabulated. With the permission of Mr. Charles Swain Thomas, who is in charge of the original Inglis tests for the Graduate School of Education, Harvard University, and of Ginn & Company, the publishers, each form has been changed in accordance with the findings of this tabulation and administered to one thousand additional persons. The re-

1. Statistical study of the four misleads in each item to detect those which are not effective.
2. Statistical study of the four misleads to detect those which approach too nearly the correct synonym of the test word.
3. Examination of each correct choice to make certain that it is a satisfactory synonym of the test word.
4. Determination of the relative difficulty of the items preliminary to their re-arrangement in order of difficulty.

This article describes the application of these four steps to a junior vocabulary test suitable to fifth, sixth, seventh,

TABLE 1

Showing four satisfactory lines of the junior vocabulary test, form AA

6. He breaks laws.	furniture	stones	rules	engagements	habits
29. They called a conference.	halt	hansom-cab	meeting	taxi	truce
40. A firm denial.	foundation	hand	contradiction	hold	leader
73. Imaginary grievances.	fancied	long-standing	genuine	visible	foolish

sults have again been tabulated and the form again altered. In this manner forms A and B have been reviewed three times and form C four times and they are approaching as near perfection as is possible with this type of test.³

In the item by item study of the results which precedes each revision there are four major considerations:

³ For a more complete discussion of the technique of revision as applied to the college vocabulary test, worksample 95, see *Psychometrics, A Study of Psychological Measurements* by Johnson O'Connor, to be published by Harvard University Press.

and eighth grade and first year high school pupils.

JUNIOR ENGLISH VOCABULARY TEST

Table 1 shows four of the one hundred and fifty lines of what will be called for convenience the "unrevised form" of the junior vocabulary test, worksample 176, form AA. The items are printed exactly as they appear on the test. The number preceding each line gives its place in the list, which is arranged in order of difficulty. These illustrative lines are among those which have proved satisfactory in the unrevised form. The reliability of

this form as determined from the correlation of odd and even items, is 0.95. The standard error of an individual score is 2.2 words.

After much preliminary experimentation the unrevised form was admin-

TABLE 2

Provisional norms on junior vocabulary test

This table shows in column I the mean junior vocabulary score, in cooperative and trade schools, obtained by each grade with which we have experimented, and in column II the mean junior vocabulary score obtained by each grade with which we have experimented in private preparatory schools.

	AVERAGE JUNIOR VOCABULARY SCORE	
	I. Cooperative and trade schools	II. Private schools
Fifth grade.....		87
Sixth grade.....		86
Seventh grade.....	78	116
Eighth grade.....	83	123
Ninth grade.....	94	131
Tenth grade.....	113	138
Eleventh grade.....	134	
Twelfth grade.....	134	

istered to eight hundred pupils through the coöperation of the following schools:

Dana Hall School
Dayton Cooperative School
Derby Academy
Fieldston School
John Lewis Child School
Masters School
Springfield Trade School

Average scores achieved by students in the various grades of these schools are shown in table 2. These averages may be used as provisional norms until more accurate ones based on larger populations are available.

1. *Statistical Study of the Four Misleads in Each Item to Detect Those Which are not Effective.*

A measure of this type should be constructed with two aims in mind; first, one who knows the precise meaning of the test word should underline the correct synonym; and second, one who has no notion of the meaning should underline the synonym only in accordance with the laws of chance. The first of these desirable ends is within easy reach. The second means that one who has no conception of the answer has one chance in five of guessing correctly, provided the five choices are equally appealing. In the first version of a vocabulary test the choices are seldom equal.

For instance, line 26 of the unrevised form reads:

He is *crooked* in business. a-failure
32(.04)

cowardly successful timid
6(.01) 6(.01) 0(.00)

dishonest
755(.94)

The figure under each choice shows the number of persons in a total population of eight hundred who selected that word as a synonym of *crooked*. The number beneath the correct answer is in italics for easy reference. The five figures do not always add to 800, because subjects occasionally omitted a line contrary to instructions. In this instance one person has not marked the line with the result that the five add to 799. No one selected *timid* and yet the line is not easy for 32 marked *a-failure*. *Timid* is not misleading and has been changed to *efficient* in form AB, the first revision

of form AA. This may be equally valueless, for the selection of a satisfactory mislead is still largely by chance. The altered line will be administered to a new group and only the tabulated results can determine whether or not the change is an improvement.

In line 70:

She is a <i>tomboy</i> .	flirt	bore
	43(.05)	7(.01)
romping-girl	spinster	failure
736(.92)	10(.01)	0(.00)

failure enticed no one while *flirt* caught 43. *Failure* has been replaced by *child*.

In these two lines there are only four active choices. Were there a single choice everyone would mark it and the test be valueless. With two choices to a line every other person would guess correctly or each individual would guess correctly half of the time. In 150 items the lowest person would guess 75 correctly and the scores would range from 75 to 150. Under these conditions half of the time consumed in taking the test would be wasted. With three choices to a line every third person would guess correctly or each individual would guess correctly one-third of the time. In 150 items the lowest person would guess 50 correctly and the scores would range from 50 to 150. One-third of the time would not contribute to the final score. As the number of effective choices increases, the minimum score decreases and the range of final scores increases. With this increase in range goes also an increase in reliability. The larger the number of effective choices the more reliable the measure.

There is no imperative reason for five choices rather than four or six or seven. Five can, however, be printed conveniently on one line. The inclusion of a sixth seems to overload the test and reduces the minimum score only from 30 to 25, not enough, we feel, to warrant the addition.

A mislead marked by a small number of individuals may be proportionately as useless as one which intrigues no one.

In line 35:

The tea is <i>lukewarm</i> .	<i>too-strong</i>	
	1(.00)	
undrinkable	moderately-hot	weak
14(.02)	757(.95)	19(.02)
cold		
9(.01)		

too-strong was underlined by only one, while *weak* was underlined by 19 and *undrinkable* by 14. *Too-strong* is not as misleading as *undrinkable* or *weak* and has been changed to *old*.

In line 13:

She overcame her <i>shyness</i> .	<i>fear</i>	
	16(.02)	
enemies	bashfulness	surroundings
7(.01)	767(.96)	1(.00)
desires		
9(.01)		

surroundings attracted only a single person, whereas *fear* attracted 16 and *desires*, 9. *Surroundings* has been changed to *boldness*.

In line 98:

I distrust him.	believe-in	doubt
	20(.03)	739(.91)
revere	like	desire
36(.05)	1(.00)	12(.02)

like has been changed to *misunderstand*.

In line 68:

They heard the <i>giggle</i> .	wagon 12(.02)	saw 2(.00)
chattering	nervous-laughter 46(.06)	724(.91)
growling	14(.02)	

saw has been replaced by *whisper*.

In line 57:

Showy clothes.	gaudy 537(.67)	borrowed 14(.02)
new	shabby 159(.20)	unused 62(.08) 25(.03)

borrowed has been changed to *theatre*.

One must decide arbitrarily where to draw the line in this classification of a response as not effective. To date we have changed, at each revision, the choice underlined by the fewest number of individuals providing some other incorrect choice on the same line has been marked by at least ten times as many. The choice underlined by no one has been changed providing at least ten have underlined some other incorrect choice. In line 26 already cited, no one underlined *timid* and more than 10, actually 32, underlined *a-failure*. In line 35 one person underlined *too-strong* and more than ten times this number, in fact 19, underlined *weak*. In line 57, 14 underlined *borrowed* and more than ten times this number, 159, underlined *new*.

In line 14:

The local horse <i>hoer</i> .	wit 2(.00)	vagabond 2(.00)
scandal	blacksmith 2(.00)	idiot 788(.99) 1(.00)

idiot attracted only one but the line has not been changed because ten or more were not misled by any wrong choice. The line as a whole is easy

for the grades to which it has been administered. As far as we know from these results it is satisfactory for younger children and earlier grades. The undesirable item is not the easy one but the one in which the incorrect choices are of unequal difficulty. Assume some line, *A*, known to 8 per cent of those tested; and another line, *B*, known to 10 per cent. *A* is then more difficult than *B*. If *A* has four effective choices it is guessed by one quarter of those who do not know the meaning and, if we assume for simplicity only two types of persons, those who know the test word and those who do not, it will be marked correctly by 8 plus $\frac{9.2}{4}$ or 31 per cent. If *B*, which is actually easier, has five effective choices it will be marked correctly by 10 plus $\frac{9.0}{5}$ or 29 per cent. Since the only means by which we can measure relative order of difficulty is by the number who fail, *B*, although actually easier would be thought to be harder than *A*. Only by having in each item the same number of effective choices can we get an accurate order of difficulty of the test words.

One change only is made in each line so that the direct effect of that change can be evaluated with each revision.

In line 110:

A lengthy examination.		discussion 91(.11)
excuse	sentence	investigation 8(.01) 25(.03) 663(.83)
departure 7(.01)		

departure has been changed to *report* but *excuse* has been left. By noting the effect of each change it is hoped that guiding principles for the con-

struction of satisfactory tests will be discovered and the number of necessary revisions reduced.

2. *Statistical Study of the Four Misleads to Detect Those Which Approach too Nearly the Correct Synonym of the Test Word.*

The same statistical analysis leads to a second step in the revision.

In line 122:

A <i>robust</i> child.	rollicking	fat
	101(.13)	198(.25)
(Upper Quartile)	5(0.02)	32(0.16)
	sturdy	cunning
	372(.47)	18(.02)
(Upper Quartile)	167(0.81)	0(0.00)
	naughty	
	98(.12)	
(Upper Quartile)	0(0.00)	

Fat was thought to be a satisfactory mislead sufficiently far from the correct meaning of *robust*. It has, however, been marked by 198 out of 800 persons, enough to suggest some justification for the answer. Furthermore, of the 200 who have the highest scores and compose the upper quartile of the 800, 32 or 16 per cent underlined *fat*. This word is so misleading to those who otherwise rank well that a further dictionary study has been made. As a result *fat* has been replaced by *weak*.

In line 111:

It <i>relieves</i> pain.	kills	increases
	107(.13)	18(.02)
(Upper Quartile)	10(0.05)	1(0.00)
	lessens	prevents
	599(.75)	70(.09)
(Upper Quartile)	195(0.95)	0(0.00)
	causes	
	4(.01)	
(Upper Quartile)	0(0.00)	

Kill was used as mislead because at one time patent medicines could

legally be advertised as *relieving* pain but not as *killing* pain. It was felt, therefore, that there was a sufficient difference between the two words to justify the inclusion of *kills* as a wrong choice. The fact that 10 of the upper quartile marked *kills* led to a more careful study of the word. To *alleviate* means to *lighten*, to lift a burden in part from the bearer and make it easier to bear. To *relieve* may mean to lift it in part or to remove the burden altogether. *Relieve* is, therefore, half way between *alleviate* and *remove* and those who make *kills* the synonym are as justified as those who mark *lessens*. *Kills* has therefore been replaced by *awakens*.

In line 147:

Unfavorable circumstances.	happy	
(Upper Quartile)	228(.29)	0(0.00)
	unfriendly	unreal
(Upper Quartile)	416(.52)	92(.12)
	88(0.57)	4(0.02)
	dangerous	fortunate
(Upper Quartile)	228(.29)	26(.03)
	73(0.35)	1(0.00)

Dangerous is not, according to the dictionary, so close a synonym as is *unfriendly*, but the fact that it has misled a larger percentage of the upper quartile than of the total population, means that it must be changed. It has been replaced by *unusual*.

In line 137:

In the name of <i>purity</i> .	faith	
(Upper Quartile)	84(.11) 10(0.05)	
	christianity	
(Upper Quartile)	274(.34) 33(0.16)	
	honesty	peace
(Upper Quartile)	209(.26) 43(0.21)	11(.01) 0(0.00)
	innocence	
(Upper Quartile)	209(.26) 118(0.57)	

Honesty is not as misleading to the upper quartile as it is to the total distribution and might remain on this basis. It approaches, however, too close to the correct meaning, for *honesty* may at times mean *chastity*, which, in turn, is a synonym for *purity*. *Honesty* has, therefore, been changed to *loyalty*.

An infallible dictionary study of the test should reveal these inaccuracies without recourse to a statistical analysis. But the factors which influence the choice of each synonym and mislead are too many to keep clearly in mind. A careful dictionary study has been made of each form, but in one instance where the correlation of odd and even items was computed before and after, the reliability of the test did not improve. The only practical procedure which we have found of increasing the accuracy with every revision is to locate by means of statistics the needed changes and to make those which are confirmed by a dictionary study.

3. Examination of Each Correct Choice to Make Certain that it is a Satisfactory Synonym of the Test Word.

The fact that many who score high on the test as a whole select a wrong choice on some one item, may show that the correct choice is so poor a synonym that it is no nearer.

In line 141:

<i>Responsive to treatment.</i>		<i>sympathetic</i>	
		207(.26)	
(Upper Quartile)		115(0.56)	
		<i>devoted</i>	<i>opposed</i>
		232(.29)	97(.12)
(Upper Quartile)		18(0.09)	7(0.03)
		<i>used</i>	<i>hardened</i>
		158(.20)	88(.11)
(Upper Quartile)		53(0.26)	10(0.05)

A larger percentage of the upper quartile than of the total population mark the wrong choice, *used*. This is not, apparently, because the word is a close synonym of *responsive* but because *sympathetic* is not close, at least in this phrase. *Sympathetic* has been changed to *answering*.

Another more elusive source of weakness is found in line 43:

The answer is <i>neat</i> .		<i>clever</i>	
		617(.77)	
(Upper Quartile)		191(0.93)	
		<i>insulting</i>	<i>foolish</i>
		2(.00)	6(.01)
(Upper Quartile)		0(0.00)	0(0.00)
		<i>negative</i>	<i>affirmative</i>
		39(.05)	125(.16)
(Upper Quartile)		2(0.01)	10(0.05)

Affirmative attracts ten, 5 per cent, of the upper quartile and 125, 18 per cent, of the total population. If *affirmative* is a more difficult and more unusual word than *neat*, the individual who knows the meaning of *neat* may think *clever* not quite close enough and mark *affirmative* as a guess because he does not know its meaning. To substantiate this conjecture we must know the exact order of difficulty of every word in the test. The one hundred and fifty test-words in this junior vocabulary list, worksample 176, are the one hundred and fifty correct synonyms of form B of the college vocabulary list, worksample 95. The present study will show us the order of difficulty of these words and the percentage of each age and of each school grade which misses them. We already know the order of difficulty of the test-words of the college list and the percentage of each age and school grade which misses them. A comparison of the two results will show whether

the synonyms of the college test are easier than the test-words which they define. Until the study is complete we will not eliminate *affirmative* but we have replaced *clever* by *nice* with the hope that it will prove a more satisfactory synonym to those who score high on the tests as a whole.

4. *Determination of the Relative Difficulty of the Items.*

There are many reasons for going to this extraordinary care in perfecting minutiae. Some are theoretical, others are more practical.

About three years ago the Human Engineering Laboratories were opened to any boy or girl, twelve years of age and over, who wished to try the work-samples which have been developed and to spend two hours in discussing his or her educational and vocational problems. We are now being asked to remeasure boys and girls tested two and three years ago and to evaluate the improvement in vocabulary which has taken place in the interim. Between the ages of twelve and twenty, the normal improvement in the college vocabulary test score, worksample 95, is five words a year. A reasonably crude measure places an individual as above or below average for his or her age, but only an exceedingly accurate one can show a change of the order of five words in the final score. With every revision, our present tests more nearly approach this goal, but even after three or four revisions they do not indicate as yet this yearly growth with certainty.

Another approach is to extend the scale so that the normal annual change is ten words instead of five. This

could easily be done by giving a list of 300 words instead of 150, but such a list is too long for practical use. The same result can be achieved, without lengthening the time required

TABLE 3

Twenty-five items of the junior vocabulary test, worksample 176, arranged in order of difficulty

REVISED ORDER OF DIFFI- CULTY	ORIGINAL ORDER OF DIFFI- CULTY	TEST-WORD	NUMBER WHO MADE CORRECT CHOICES
1	14	Horseshoer	788
4	6	Laws	782
6	11	Untidy	775
11	29	Conference	773
12	13	Shyness	767
18	35	Lukewarm	757
19	26	Crooked	755
31	70	Tomboy	736
36	98	Distrust	729
38	59	Quenched	728
41	68	Giggle	724
68	110	Examination	663
86	43	Neat	617
87	40	Denial	617
96	111	Relieves	599
108	89	Reclining	567
110	73	Imaginary	538
111	57	Showy	537
118	63	Acquitted	470
124	114	Impedes	446
130	147	Unfavorable	416
133	122	Robust	372
143	139	Servile	247
145	137	Purity	209
146	141	Responsive	207

to take the test, by arranging the words in order of difficulty.

It is a waste of time to test a person with a group of words when it can be predicted in advance that he will make no errors. It is equally wasteful to test him with groups in which he will mark correct answers only by chance.

With this in mind, the words of both the college and the junior vocabulary tests are arranged with the easiest words first and the most difficult ones last. They are arranged for convenience in ten groups of fifteen words each. The most difficult word of each of these ten groups is printed in an introduction. This introduction is given first and shows in advance an individual's range of vocabulary and indicates on which sections of the main test his time can most profitably be spent.

Because line 14, already used as an illustration, is marked correctly more often than any other line, it becomes line 1 in the revised form of the test.

Table 3 shows the revised and original orders of difficulty of the twenty-five items which have been used as illustrations.

One who knows the meaning of the most difficult words of the list, *servile*, *purity*, and *responsive*, and other words of similar difficulty, will presumably know the meaning of the simplest words. It is a waste of time to examine such an individual on the meaning of *horseshoer*, *laws*, and *untidy*. We may assume a knowledge of these. In order to evaluate vocabulary accurately, we need not give a test which extends over the entire range from *horseshoer*, to *responsive*, but we need place only the boundary.

Education and Research at a Mechanics Institute

VII. Measuring Individual Accomplishment

BY RALPH W. TYLER, *Bureau of Educational Research, Ohio State University*

Rochester Athenaeum and Mechanics Institute has re-defined its aims, and developed a program and practical methods of continuing research, through which specific objectives have been formulated in workable terms, while content of instruction and methods of training have been adjusted to achieve these ends. This concluding article tells how the actual accomplishments of individual students are measured, and how the measurements are used in selecting students and in placement; in remedial instruction, and in ascertaining progress made in mastering one unit after another; in guiding the students and in furnishing them a vital motivation. The measures here described also supply a means of ascertaining how well the institution itself is actually realizing its objectives.

THE use of measurements and records is an essential feature in the new program at Rochester Mechanics Institute. Formerly, as in many other institutions, the measurement of individual student accomplishment was used solely to supply information for grading at entrance and in the various courses, whereas now at Mechanics Institute there is an unusually comprehensive guidance policy which calls for a correspondingly comprehensive body of facts about each student. The need for more extensive information is evident in many areas of the Institute program. For example, in selecting students many schools attempt, through entrance examination data and records of high school grades, to obtain a homo-

geneous group of students. At Rochester, however, the purpose is to obtain students who have interests in harmony with the objectives of the Institute, and who are likely to profit from the educational program provided there. The Institute program aims to serve a wider range of abilities and interests than is done by liberal arts colleges. When students enter Mechanics Institute, it is necessary to use methods of measurement which will reveal individual interests, character traits, accomplishments, and any other data that may bear upon the question of individual promise.

The vocational placement of students in coöperative work and in permanent jobs demands records of comprehensive individual measurement

with reference to the student's interests, character traits, accomplishments, abilities and the like.

Measurements play an important part also in the development of the remedial program, which was instituted in order to avoid giving regular class instruction in subject matter which students should have mastered in prerequisite secondary school courses. The testing program is used to discover students who have insufficient mastery of prerequisite skills or subject matter. These students are then placed in special remedial classes until such time as the tests show that they have mastered the subjects.

Another phase of the Institute program calling for measurement is the development of routine pretests, progress tests, and mastery tests for use in connection with each unit of instruction. The procedure in this instance aims to facilitate reliable comparisons of each year's work with that of earlier years in order that the measurement program may furnish both the maximum incentive values for students and the desired values for administrative study.

Finally, the most important factor affecting the situation is the task of organizing the mastery tests in particular, and the measurement program and record system in general, so that the school administration may have a means of measuring the effectiveness with which the objectives of each course and subject are being administered, and the success with which the Institute as a whole is achieving its objectives.

These demands for the measurement of student accomplishment cannot be

met unless a broad definition of *measurement* be accepted. The term is used commonly as though it were synonymous with "paper-and-pencil test." At Rochester the term is not so restricted. The Institute is concerned with techniques for obtaining evidence of the degree to which students are attaining the important goals of education. Such evidence is called measurement when it conforms to certain standards, viz., (1) when it is based directly upon observed behavior or the observed results of behavior, (2) when these observations or results are recorded, and (3) when various independent evaluations of the behavior do not fluctuate widely.

This conception of measurement is a natural outgrowth of the new program at Rochester. Indeed, the Institute, by virtue of its wide range of objectives, and its varied opportunities for observing the behavior of students and for collecting the results of behavior in the classroom, in the laboratory, in extra-curricular activities, in personal conferences and on coöperative jobs, furnishes an ideal place in which to develop a truly comprehensive program of educational measurement.

The measurement program at Rochester gives a wholesome correction to the emphasis upon verbalisms that is characteristic of most testing programs. In the electrical course, for example, one objective is for the student to learn to connect a voltmeter properly in an electric circuit. Obviously his achievement of this objective can best be measured by observing him when he is asked to connect the voltmeter in the circuit. The student in

retail distribution has, as one objective, to develop skill in approaching a customer. The achievement of this objective can best be measured by observation of the student while employed on a cooperative job. This observation can be evaluated quite objectively by the use of proper specifications for judging the skill in this particular action. One objective in food administration is for the students to recognize any applications of principles of chemistry which actually arise in connection with his cooperative job. The attainment of this objective can be measured by having the student bring in illustrations of the applications which he found. Such illustrations may be evaluated by the use of proper specifications. For measuring the objectives of the liberal courses, this broader conception of measurement is especially important. Growth in open-mindedness, or in the development of a personal philosophy, are not measured by paper-and-pencil tests alone.

The general technique agreed upon by the staff for developing the program of measurement involves the following steps:

1. Formulation of objectives
2. Definition of each objective in terms of student behavior
3. Collection of situations in which students will reveal presence or absence of each objective
4. Organization of these situations into tests, observation check-lists, and the like
5. Presentation of situations to students
6. Formulation of specifications for evaluating student reactions in the light of each objective
7. Evaluation of student reactions
8. Determination of objectivity of evaluation

9. Improvement of objectivity, when necessary
10. Determination of reliability
11. Improvement of reliability when necessary
12. Determination of the exactness of the measurement
13. Improvement of the exactness, when necessary
14. Final reorganization of the materials and procedures of the measurement devices.

The explanation and illustration of these steps have appeared elsewhere¹ and will not be reported here. This discussion will be confined to unusual items in procedure and program.

A measurement procedure must actually be used by the faculty and administration if it is to achieve its potentialities. At Rochester, experts in the field of measurement serve as staff advisers, test constructors, statisticians and critics, but the faculty and administration of the Institute administer the measurement program and assemble the records which are made and used in connection with the daily operation of the guidance and instructional program in the school. This line-and-staff organization presupposes that every element of the program must commend itself to the line organization for its practical value before it is initiated and if it is to survive. At the same time due regard is given to the continuity of records required for statistical interpretation. Care is taken to maintain comparable data for existing records while adding

¹ Tyler, R. W. A Generalized Technique for Achievement Test Construction. *Educational Research Bulletin*, April 15, 1931.

Tyler, R. W. Assumptions Involved in Achievement Test Construction. *Educational Research Bulletin*, Feb. 8, 1933.

new features. This policy may reduce the rate at which tests are published but it greatly increases the usability of the measuring devices which are produced. It also reduces the usual danger that measurements will be made perfunctorily and therefore fail to become a source of helpful information for faculty and administrative action.

A second policy at Rochester which is of great importance is the recognition that the measurement program is an evolving one. The plan is now relatively complete but the development of effective measurements must proceed step by step in each department. At the present time the attack has not gone beyond the first six steps outlined above.

This policy of an evolving program is especially significant because it permits interaction between the developing measurement program and the curriculum program. In the curriculum revision program, the first step taken by Dr. W. W. Charters was to call upon the faculty to formulate the objectives of the Institute as a whole. Later, attention was given to preparing a statement of objectives for each curriculum, course, and unit of instruction. (The use of activity analyses to guide the organization of course content has been described in earlier articles of this series.) In the first editions, the objectives were commonly stated either as generalizations based upon the activities involved, or as sub-headings drawn from an analysis of the activities. For example, in the curriculum which leads to the basic terminal job of buyer, an activity analysis of the job of training salesmen was made, and this was used in construct-

ing a freshman course in merchandise information. The development of certain details in this course furnish an apt illustration of the interaction between the measurement program and the curriculum program. In the first edition of this analysis of a salesman's job, there appeared the following items:

47. Selling
- 48.
- 49.
- 50.
- 51.
52. Giving selling points

The objectives of the course which were drawn chiefly from these two activities included items as follows:

Emotional objectives or attitudes

- a. To develop an understanding of the importance of merchandise information, professionally and personally

Skills

- a. To develop skill on the job, currently and in the future
- b. To develop an elementary technique of gathering, organizing and presenting merchandise materials

As the measurement program developed, it became apparent that these statements of objectives required further amplification. In an education which functions in the lives of students, the measurement of results of the instructional program must be sought in the behavior of the student. Accordingly, the tester first examines the objectives of a particular area of instruction to learn what significant behavior is expected as an outcome. Statements of objectives like the foregoing prove inadequate for such a purpose.

Furthermore, Dr. C. R. Mann pointed out that these statements of activities and objectives fell short of achieving their maximum incentive value for the student because they lacked descriptive statements which would serve to define the expected outcome in terms of values of the activity. The working hypothesis he advances is that the interest of students in self-training is more certainly stimulated by a clear vision of the desirable ends to be gained from pursuit of the activity than by an authoritative prescription of the activity.

Hence, as viewed from both the viewpoint of the guidance criteria and from that of the testing criteria, the first edition of activities and objectives contained many objectives which were so vague that they proved to be merely glittering generalities when the time came to use them for guidance and measurements. For the 1932-33 edition of the teacher's manual, a revision was made in which the items quoted above from the first edition of the salesmanship course now appear as follows:

47. Sell merchandise in such a way that you secure customer satisfaction and re-order volume for your store

48.

49.

50.

51.

52. Give carefully selected selling points in an effective way

Objectives:

This course is included in the curriculum to help you to:

1.

2.

3. Develop personal and professional proficiency in the techniques of

gathering and using merchandise information in selecting and handling merchandise, so that you—

a.

b. As a salesperson, will:

(1)

(2)

(3)

(4) Sell merchandise effectively, because you

(a)

(b) Give selling points that are accurate, clear, convincing and appropriate

The problem of devising measurements is greatly cleared by these new statements, and by the instructor's sub-analysis of the essentials and techniques of selecting selling points and of making an effective presentation. The curriculum and measurement programs have both benefited through this interaction.

A third policy which is of major importance to the measurement program is the emphasis placed by the Institute upon the self-motivation of students. It is an essential purpose of the Institute that students shall "run on their own steam" rather than depend upon external coercion. When the student is provided with a clear statement of objectives and with specifications for evaluating his own behavior, he is helped materially in his effort to "run on his own."

This type of student aid is illustrated by the evaluation scale covering performance in dining room service projects which is reproduced on page 218.

Evaluation material of this sort, placed in the hands of students, is valuable for purposes of instruction, particularly in relation to commercial standards of quality and quantity of

ROCHESTER ATHENAEUM AND MECHANICS INSTITUTE

ROCHESTER, N. Y.

FOOD ADMINISTRATION DEPARTMENT

Principles of Institution and Commercial Food Preparation and Service I

RATING SHEET FOR STUDENT PERFORMANCE IN DINING ROOM WAITRESS SERVICE

In rating check score for performance of each item in columns below.

	H	D	L	G
I. Personal Neatness and Appearance				
A. Uniforms				
1. Free from soil.....				
2. Well pressed.....				
B. Hair.....				
C. Hands and fingernails.....				
D. Shoes clean and in shape.....				
E. Hose.....				
F. Body cleanliness and absence of odor.....				
G. Hand washing when on duty:				
1. After use of handkerchief.....				
2. After arranging hair.....				
3. After visit to lavatory.....				
H. Discreet use of cosmetics.....				
I. Posture.....				
II. Preparation Before Guests Arrive				
A. Caring for temperature, ventilation and light of room.....				
B. Correct and suitable table setting.....				
III. Table Service				
A. Skill in loading trays.....				
B. Correctness of service.....				
C. Attentiveness to guests' needs.....				
D. Speed of service.....				
E. Skill in loading soiled dishes on trays.....				
IV. Dismantling Table After Guests Leave				
A. Care of returned foods.....				
B. Care of soiled and wet linen.....				
C. Care of dining and serving tables.....				
V. Salesmanship				
A. Helpfulness.....				
B. Courtesy.....				
C. Diplomacy in meeting complaints and unusual situations.....				

Directions for Using Score:

- Performance of any item will be rated *D* when up to the minimum standard of high grade service in an institution dining room.
- Performance of any item will be rated *H* for excellency of operation when on the level of the maximum standard of high grade service in an institution dining room.
- Performance of any item in score will be rated *L* when the performance occasionally falls below the *minimum* standard of high grade service in an institution dining room but is acceptable in an institution dining room serving patrons lacking in discrimination.
- Performance of any item in score will be rated *G* when:
 - The quality of performance of any item continuously without improvement is below the minimum standard of high grade service in an institution dining room and sacrifices the good will and satisfaction of discriminating patrons.
 - The performance in quantity or extent continues without improvement below the minimum standard of high grade service in an institution dining room.
 - The growth of the student is at a standstill at the *L* rate of performance upon an assignment to a second block of training in this area.

production. Furthermore, it furnishes a basis for securing intellectual and emotional acceptance of the items in the specifications for grading, which are provided for students in each course. The objective quality of ratings such as those illustrated by the sample above is increased through the completeness of the analysis of the sub-items rated,

ment opportunities as incentives for student compliance with institutional requirements. The student has a deeper interest, however, in objectives which he recognizes as originating with prospective employers and in community ideals and standards, than in the requirements as to grades, credits and membership in honor societies,

ROCHESTER ATHLETIC AND MECHANICS INSTITUTE
ROCHESTER, N. Y.
MECHANICAL DEPARTMENT PROGRESS RECORD

COURSE Mechanical Drawing I INSTRUCTOR Brodie

CLASS OF 1915

STUDENT'S NAME	DATE STARTED	JOB OBJECTIVE	INSTRUCTION BLOCK										Final Grade	Completed
			11	12	13	14	15	Extra						
Austin, L.	10/10	Tech. Superv.	D	D	203	D	405							
Bleat, L.	9/12	Prod. Superv.	L	D	2	D	3	D	5	D			D	2/28
Campbell, C.	9/12	Tech. Superv.	D	D	2	L	5	L						
Cornio, L.	10/10	Tech. Superv.	H	H	2	H	3							
Cramer, G.	9/13	Power Pl. Sup.	D	L	2	Withdrawn							W	
Eubankson, P.	2/12	Mach. Des.	D	D	2	D	3	D	4	D	5	D	D	2/28
Draper, W.	9/12	Mach. Des.	D	D	2	D	3	D	4	5	D		D	2/27
Grillione, G.	9/21	Prod. Superv.	L	L	2	Withdrawn							W	
Harford, M.	2/12	Mach. Des.	D	D	2	D	3	D	4	D	5	D	D	2/27
Harard, R.	2/12	Mach. Des.	D	H	2	H	3	H	4	D	5	D	H	2/20
Jackson, G.	9/12	Prod. Superv.	L	L	2	Withdrawn								
Kildare, M.	2/12	Power Pl. Sup.	D	D	2	H	3	H	4	H	5	H	H	2/17
Kunes, B.	2/12	Tech. Superv.	H	H	2	H	3	H	4	H	5	H	H	2/15
Latta, W.	2/12	Tech. Superv.	H			H	2		H				H	11/2
Marconi, C.	10/10	Prod. Superv.	D	D	2	L	3	L	5					

Place the number of school period 1, 2, 3, 4, etc. on the horizontal line opposite the student's name and as far to the right along that line as the student has progressed.

FIG. 1

the advance information supplied the student concerning the weighting given each sub-item, and the participation of students in the rating procedure.

The record system in use at the Institute is being modified to give support to the educational policies. In the past, at Mechanics Institute and elsewhere, there has been a tendency to use grades, credits for units, membership in honor societies, and employ-

ment opportunities as incentives for student compliance with institutional requirements.

The individual program of instruction, now in process of development, lends itself to the use of graphic records which are helpful in focusing the attention and interest upon accepted objectives. Figure 1 is a reproduction of part of a chart for a mechanical drawing course. Horizontal distances hatched on the chart indicate the time

required by individual students to achieve mastery of each unit, for which the median time experience is approximately four weeks. Both the student and the supervisor can quickly determine from this chart what progress the student has made in a given course. The chart serves not only as a motivating device but also as a basis for guidance. For example, one student may finish his work in elementary mechanics in less than the usual time. In checking over the charts with the supervisor the student notes that he is making average progress in his other courses. He therefore elects to begin his advanced mechanics at once, thus utilizing the time he has saved in his rapid progress in elementary mechanics. Another student who has finished the work of one course in an unusually short time may be having difficulty with some other course. Both these facts would be apparent on the charts. In a conference with the supervisor the latter student might decide to spend on his difficult course the time saved by rapid progress in the other courses. Progress records facilitate this type of guidance.

This description of progress charts illustrates a type of record which justifies the cost of its maintenance by the day-to-day use which is made of it in class management and student guidance. From the outset the effort was made to utilize existing measurements and records insofar as they had proven useful, and to add measurements and records which the faculty believed to offer promise of service in current use. In other words, the tests and the record system were planned for faculty use

rather than for use in a specialized research department.

The various items of personnel data are being interpreted by the supervisors. In making such interpretations, the supervisors are guided by their own best judgment, and aided by such evidence as has already been collected regarding the usefulness of these data for guidance purposes. Recognizing that many aspects of human personality should be considered in making educational decisions, the supervisors follow the policy that no single test can constitute the sole basis for administrative decisions. In connection with any important decision all the available facts about the student are reviewed and interpreted. This leads to two fundamental policies: (1) that the primary records themselves shall consist of facts which are as objective as possible, and (2) that the decisions arrived at from these facts shall represent an integration of the facts made by a supervisor. This integration shall take the form of a recorded summary and a report of decisions which represent his best judgment. The development of accurate and relatively complete personnel data is thus being encouraged by the practice of placing upon the supervisor the responsibility for determining the implications of these data through experience and experiment.

This brief sketch of the evolving program of measurement at Rochester Mechanics Institute indicates some of its unique characteristics. Based upon a broad conception of measurement, an attempt is being made to obtain evidence of the degree to which

students are attaining each of the objectives of the Institute. Using test technicians as advisers only, the development of measurements is in the hands of supervisors and faculty, thus assuring the usefulness of the measuring devices produced, as well as their survival. The testing program functions in many areas of the Institute activities, as for example: in the selection of students at entrance; in the vocational placement of students in coöperative work and in permanent jobs; in the program of remedial instruction for students who have insufficient mastery of prerequisite skills or subject matter; and in the development of routine pre-tests, progress tests and mastery tests in connection with

units of instruction. As the measurements are developed and used in Rochester, they do not automatically dictate the personal decisions of the faculty and administration, but they do provide facts which are important in helping to form judgments of value for guidance of students. They also provide the individual student with a means of self-rating that enables him to judge his accomplishments objectively and that stimulates him to "run on his own steam." All these various functions of the measurement program, moreover, are united in serving one common purpose, namely, to furnish a means of determining the degree of success with which the Institute as a whole is realizing its avowed objectives.

Attitudes of Unemployed and Employed Engineers

BY O. MILTON HALL, *Personnel Research Federation, New York*¹

The grave consequences of unemployment sometimes reach beyond the disintegration of skills and of health. They may undermine a man's attitudes toward his fellows and toward social controls. Using new tools of research, Mr. Hall has for the first time measured the extent of differences in attitudes between employed and unemployed. His findings provide objective evidence of the worth, in terms of morale, of investing relief funds in wages.

A group of unemployed men and a group of employed men were compared with regard to their occupational morale, their attitudes toward employers as a class, and their attitudes toward religion, after the two groups had been matched in eight particulars: age, salary (on last job of unemployed men), nativity, education, religion, state licensing, marital status, and occupation (all were professional engineers). The extent of attitude differences is shown. Seventy-five per cent of the unemployed men had poorer morale than the average employed men, and 68 per cent were more antagonistic toward employers as a class. The net effect of the experience of unemployment on attitude toward religion was found to be small. The article then shows the very definite relationship between morale and varying degrees of financial security of unemployed men, and between morale and differences in employed men's feelings of job security. The morale of destitute men who had been given "work relief" or "made work" was definitely better than the morale of men who, although similarly destitute, had not received such help. The morale of employed men who anticipated losing their jobs almost any time was as low as that of unemployed men who were in no particular need.

PROMINENT among psychological aspects of the current widespread economic depression is the degree to which severe unemployment has affected men's atti-

tudes. Reports from social workers and psychiatrists have described the translation of economic depression into mental depression, while police

¹ Read before the Annual Meeting of the American Psychological Association held in Chicago, September 7 to 13, 1933. The study here reported in part was made as a project of the Personnel Research Federation, directed by W. V. Bingham. Costs

were covered by a grant from the Engineering Foundation and by the Federation. Data were gathered and statistical computations made by unemployed engineers supplied and paid by the Emergency Work Bureau and the Professional Engineers' Committee on Unemployment.

authorities have been prepared to cope with expected radical disorders. Great sums of money have been spent in an effort to preserve the morale, as well as the physical health, of the unprecedented number of destitute unemployed men and women. Such considerations led the Personnel Research Federation to a comparative study of certain social attitudes of unemployed and employed men. The methods used in this study, and some of the findings, will be described here. A group of unemployed men and a group of employed men will be compared with reference to their occupational morale, their attitudes toward employers as a class, and their attitudes toward religion. We shall go further, however, in order to show the relationship between morale and varying degrees of financial insecurity of unemployed men, and between morale and differences in employed men's feelings of job security. We shall be especially interested in comparing the occupational morale of men in desperate straits with that of men in similarly desperate condition, but who were receiving work relief.

The men who took part in the study were on a relatively high occupational level. All were professional engineers. Eighty-four per cent were college graduates holding at least one degree, and another ten per cent had gone part way through college. Their median age was 37. Among the unemployed men the median length of time out of work was 39 weeks, and the median salary on their last jobs was \$62 a week.

The method of investigation may be briefly outlined.

Both unemployed and employed men

revealed their attitudes by accepting or rejecting various statements, such as, "Industry's contribution to unemployment relief is mainly an attempt to keep unemployed men from stirring up trouble," and "A revolution might be a very good thing for this country." The men were asked to express strong agreement, agreement, indecision, disagreement, or strong disagreement toward each statement. Opinion schedules and personal history questionnaires were filled out after brief interviews during which the subjects were guaranteed complete anonymity. The three attitude continua dealt with in this paper were measured by means of scales constructed according to the Likert² method, which groups opinion items proven to be definitely related to one another. While for convenience the three scales have been given apparently appropriate names, each scale measures merely that common element which runs through its constituent items. What is being measured will be best understood, therefore, by examination of individual statements. The scale for measuring *occupational morale* includes such statements as: "Ambition is all right for youngsters, but a man gets to realize it is all bunk," and "Any man with ability and willingness to work hard has a good chance of being successful." The following are examples of items making up the scale for measuring *attitude toward employers* as a class: "Most companies are genuinely interested in the welfare of their employees;" "Most employers think only

² Rensis Likert. A Technique for the Measurement of Attitudes. *Archives of Psychology*, No. 140, 1932.

of their profits and care little for employees' welfare." The scale for measuring *attitude toward religion* contains statements like these: "Without religion the world would be much less civilized," and "If I were broke and hungry, religion would not be much of a comfort." The corrected split-half reliability coefficients of the three scales are .84, .85, and .91 respectively.

The attitudes of 360 unemployed men were measured in this manner, as were, for comparative purposes, the attitudes of more than five hundred employed men. We desired to compare the attitudes of two groups which differed in employment status, but which were similar in other respects. But examination revealed other differences in the samples as randomly gathered: for instance, there was a high percentage of foreign born in the unemployed sample; they were younger on the average than the employed; and not such a large proportion were married. To rule out possible attitude differences due to such structural differences, the two groups were matched in seven particulars. Leaving the unemployed group intact, we drew from the fund of employed cases a sample that matched the distributions of the unemployed group as regards: (1) age, (2) salary (on last job of unemployed men), (3) nativity, (4) education, (5) religion, (6) state licensing, and (7) marital status. This reduced the employed sample to 300 cases.

We were then ready to compare the attitudes of two groups, differing in employment status, but similar in other respects. Chart 1 shows the frequency distributions of scores on the three attitude scales, the unemployed

group being represented by solid lines and the employed by broken lines. To facilitate comparison, the frequencies in each group have been reduced to percentages of the group in question. High scores (beginning at the extreme left of the drawings) indicate poor morale, and unfavorable or depreciative attitudes toward employers as a class, or toward religion. The average scores of each group are indicated by arrows at the base-lines.

The greatest difference between the employed and unemployed groups is found with the scale measuring what we call occupational morale. The unemployed men have, on the average, distinctly lower morale. The difference between the averages of unemployed and employed, .5 on a scale ranging from 1 to 5, is 8 times as large as the standard error of the difference—a highly reliable figure. The extent to which morale of the unemployed men falls below that of employed, as well as the considerable amount of overlapping, is made clear by the fact that 75 per cent of unemployed men have poorer morale than has the median employed man.

The situation is quite similar with regard to attitude toward employers as a class. Sixty-eight per cent of the unemployed men are more antagonistic and bitter toward employers than is the median employed man. The difference between the averages of the two groups, .4, is 5.9 times as great as the standard error of difference.

Conflicting expressions of opinion regarding the effect of prolonged unemployment on men's religious beliefs and attitudes led us to include a scale designed to measure attitude to-

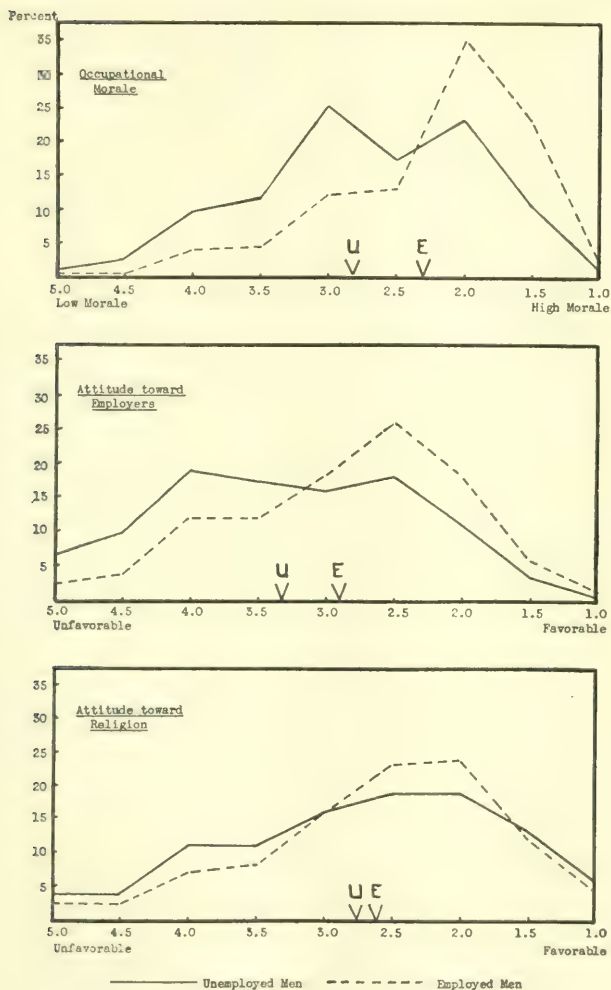


CHART 1. DISTRIBUTIONS OF ATTITUDE SCORES OF EMPLOYED AND UNEMPLOYED GROUPS

ward religion. Examination of the chart reveals that the net effect of unemployment on attitudes toward religion has been small. While the average of unemployed men is slightly less favorable toward religion than that of the employed group, the difference is not fully statistically reliable. Perhaps there has been shifting in both directions; adversity may have brought some men closer to religion, while others may have been embittered. Such movements would tend to cancel each other and would not be revealed by our technique, which tells us only that unemployment has had no more than a small *net* effect on attitudes toward religion.

Since we have just used the word "effect" in discussing the difference found between the average scores of employed and unemployed groups, the advisability of assuming such a causal relationship must be examined. We have compared the attitudes of two groups, differing in employment status, but similar in other respects, and have found, for example, that unemployed engineers were on the average definitely more antagonistic toward employers than were employed engineers. To what is this difference due? Logical analysis suggests two possibilities. The first and most obvious is that the experience of unemployment *caused* a part of the group to become more bitter toward employers. On the other hand, some men may have been selected for lay-off *because* they were already antagonistic toward their employers. While all evidence at hand points to the conclusion that at least a greater part of the attitude differences found between the two groups is caused

by unemployment and its resulting hardships, the other explanation must, nevertheless, be kept in mind as quite possibly contributing to the differences. It follows, however, that we do know that unemployment has not caused an attitude shift greater than the difference found between average scores of employed and unemployed groups, even though the experience of unemployment may not fully account for that difference.

We turn now from gross comparisons of the two major groups, in order to compare the occupational morale of unemployed men in varying conditions of economic insecurity. Quite naturally our unemployed men differed widely in this respect. Some had been out of work for only a short time and, what is more important, had substantial bank accounts. At the other extreme was the young engineer who collapsed because of lack of food. The relationship between financial security and occupational morale is shown in chart 2. A score at the top of the vertical scale indicates high morale, one at the bottom, low morale. The heavy straight arrow coming in from the left points to the average score of all unemployed men in the sample, and the arrow from the right shows the average of employed men as a group. The difference between these averages has already been discussed. The lighter arrows pointing in from the left show the average morale scores of four groups of unemployed men differing in their condition of financial security. *Group A* has the best morale, as would be expected, because men in this group were in no immediate need of financial help. Their morale is some-

what, but not greatly, lower than the average of employed men. At the other extreme is found *group D*, which is made up of men in desperate straits. Eighty-four per cent of this last group

"made work." Groups C and D were very similar in one respect: the men were all in desperate straits. But *those in group C were doing made work*, whereas the men in *group D had re-*

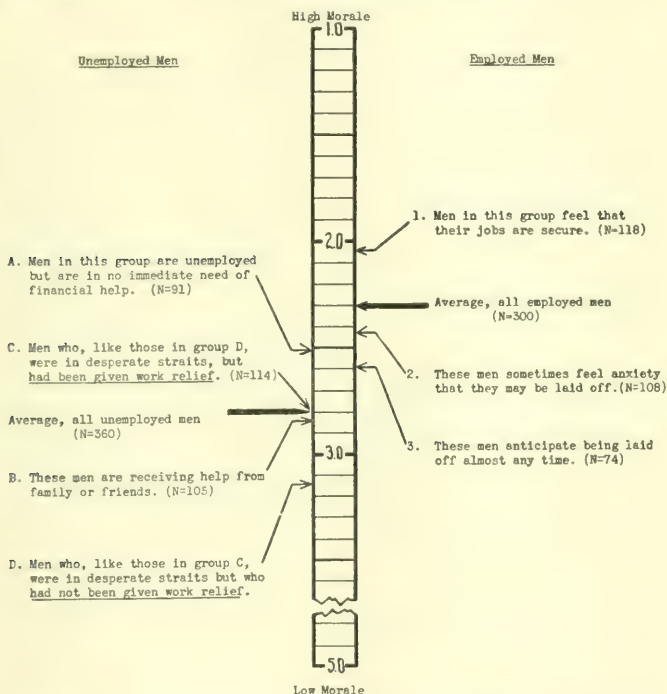


CHART 2. AVERAGE OCCUPATIONAL MORALE SCORES OF GROUPS AT VARIOUS LEVELS OF SECURITY

have poorer morale than the median employed man.

A comparison of groups C and D is significant, because it indicates the extent to which occupational morale has been saved by "work relief" or

ceived no such help from the community up to the time we measured their morale. For convenience we may use the average of employed men as a standard against which to compare the morale of both groups. The aver-

age morale score of destitute men doing made work (Group C) falls five-tenths of a unit below the average of regularly employed men, while the score of men who needed help but who did not get it (Group D) falls slightly over eight-tenths of a unit. Statistically, the chances are 99.2 in 100 that the difference found between groups C and D is a real one. Work relief has by no means raised morale to the level maintained by employed men, but such relief appears to have saved it to a worthwhile extent.

It should be noted that, since age was found to be related to morale and also to differences in financial security, these averages have been corrected for the influence of age differences.

Turn now to the right side of the chart, which deals with engineers who still had their jobs, but who differed widely in their feeling of job security. We divided our employed men into three groups: 1. Those who felt that their jobs were secure; 2. Those who sometimes felt anxiety that they might be laid off; and 3. Those who antici-

pated being laid off almost any time, or who had already received notice. The average scores of these three groups give some indication of the relation between occupational morale and feeling of job security. This finding is not submitted with finality, because analysis suggests that some factor, such as degree of success, may quite possibly enter and augment the relationship between job security *per se* and morale. The effect of such a factor would be decreased, but not eliminated, by the precautions used to rule out the effect of age differences. It is significant, however, that the average morale score of men who anticipated being laid off almost any time was slightly lower than that of unemployed men who were in no need of financial aid (Group A).

The finding of attitude differences between unemployed and employed groups, and between men differing in the degree of their insecurity, is not at all surprising. Discovery of the *extent* of these differences, however, is the major contribution of this investigation.

News Notes

ECONOMIC RECONSTRUCTION LEGISLATION OF 1933

Realizing the supreme importance of the economic legislation enacted by the Seventy-Third Congress in the special session of 1933, the National Industrial Conference Board has prepared a handbook containing reprints of its principle acts, with a concise topical analysis. The handbook is called *Economic Reconstruction Legislation of 1933* (\$2.50). Part I presents a digest of the provisions of the laws relating to 34 topics, arranged alphabetically for convenient reference. Part II contains the official text of 17 laws, selected as of sufficiently general importance in their direct or indirect bearing on industry to warrant their inclusion in this manual.

The excellent statement of objectives of the legislation deserves quotation:

"These laws taken as a whole represent a great venture in federal control and administration of economic activity. They involve a complete overhauling of the economic machine. They may be said to have two broad objectives, the one corrective, and the other constructive in character. The first aim is to correct economic maladjustments in agriculture, industry, transportation, banking, currency, credit, and finance, which are considered to have produced and prolonged the great depression, to re-establish order and stability throughout the whole range of economic activities, and thus to remove the obstacles to business recovery. The second aim is constructive, namely, to raise the level of prices in this country, to reduce unemployment, and to rebuild purchasing power. The adoption of this broad program of corrective and constructive legislation means a commitment to an intensely nationalistic economic policy on the part of the Government of the United States under the present adminis-

tration, at least for the duration of the present emergency."

The National Industrial Conference Board plans to report on, from time to time, the practical operation of the National Industry Recovery Act and other measures, and the record of accomplishment or failure in their administration.

PUBLIC EMPLOYMENT OFFICERS MEET

The International Association of Public Employment Services held its Twenty-first Annual Convention, in Washington, D. C., October 24 and 25. During the first day, W. Frank Persons, Mary LaDame, and William H. Stead presented plans of the United States Employment Service, and on the second day Walter Burr spoke on "The Organization, Purposes, and Future Plans of the National Reemployment Service," followed by R. A. Rigg who described present plans of the Employment Service of Canada.

INDUSTRIAL RELATIONS CONFERENCE, PRINCETON UNIVERSITY

The Third Industrial Relations Conference Course, under the auspices of the Industrial Relations Section of Princeton University, was held at the Graduate College of the University from September 18-22. This Conference was attended by representatives of forty-seven companies, whose total number of employees is approximately 1,300,000, or about ten per cent of those in industrial employment in the United States.

Enrollment in the Conference Course was limited to fifty executives whose principal work is in the field of industrial relations. The meetings were closed in order to afford an opportunity for free discussion. The program was planned so that particular phases of the subjects considered were pre-

sented by authorities on that subject, and adequate time was given for questions and discussion. The morning and evening sessions consisted of formal lectures followed by discussions. The afternoon sessions from 4:30 to 6 were entirely informal.

The provision of an opportunity for intimate discussion of common problems was perhaps the most important function of the Conference. The questions presented and points raised in discussion were not those of interested spectators having limited information, but rather of men possessing years of experience and concerned in evolving effective measures in meeting new developments. The setting of the Conference Course, with speakers and registrants living at the Graduate College, was such as to facilitate the exchange of ideas and experiences not only in the meetings but in smaller groups and between individuals.

The subjects of the lectures for the Third Conference Course included industrial pensions, wages and hours, labor legislation group insurance, joint relations, industrial health programs, unemployment insurance, and various phases of the "New Deal." Members of the faculty included:

Professor C. Canby Balderston, Wharton School, University of Pennsylvania, H. B. Bergen, Director of Industrial Relations, The Procter & Gamble Co.

Professor Edward S. Corwin, Chairman, Politics Department, Princeton University

E. S. Cowdick, Industrial Engineer, New York City

C. R. Dooley, Personnel Manager, Socony-Vacuum Corporation

William J. Graham, Vice-President, Equitable Life Assurance Society of the United States; President, American Management Association

Murray W. Latimer, Industrial Relations Counselors, Inc.

Professor David A. McCabe, Chairman, Department of Economics, Princeton University

Dr. A. W. Schoenleber, Medical Director, Standard Oil Company of New Jersey

Professor Sumner H. Slichter, Graduate School of Business Administration, Harvard University

T. H. A. Tiedemann, Standard Oil Company (New Jersey)

Whiting Williams, Industrial Engineer, Cleveland, Ohio

Dean Joseph H. Willits, Wharton School, University of Pennsylvania

W. H. Winans, Manager of Industrial Relations, Union Carbide Company; New York State Director, National Re-employment Service

Arthur H. Young, Secretary, Industrial Relations Counselors, Inc.

Speakers representing the NRA were: William J. Barrett, Industrial Advisory Board

C. J. Hicks, National Labor Board

Professor William M. Leiserson, Secretary, National Labor Board

Edward R. Stettinius, Jr., Liaison Officer, Industrial Advisory Board

Dr. Isador Lubin, Commissioner, United States Bureau of Labor Statistics.

Donald R. Richberg, General Counsel for National Recovery Administration.

The Chairman of the Conference was Professor David A. McCabe, and the Secretary, Professor J. Douglas Brown, Director of the Industrial Relations Section.

STUDENT PERSONNEL ADMINISTRATION

Several items of news come from the active Department of Student Personnel Administration, Teachers College, Columbia University.

During the past few months, the following publications of former students in the department of Student Personnel Administration have come from the press: *Problems of Students in a Graduate School of Education* by Dorothy C. Stratton, Ph.D. (Teachers College Bureau of Publications, 1933); *Ability in Relation to School Progress* by Anna L. Rose, Ph.D. (Mansfield Advertiser, Mansfield, Pa., 1933); *Leadership Among High School Pupils* by Marion Brown, Ph.D. (Teachers College, Bureau of Publications, 1933); and *House Management Problems of Fraternities and Sororities* by Barbara Reid

Robson (Teachers College, Bureau of Publications, 1933).

Professor Esther Lloyd-Jones, in addition to her teaching of classes in the department of Student Personnel Administration and in the major course for psychological counselors, is to be the Director of the Guidance Laboratory for the year 1933-1934. The Laboratory, which is equipped with more than 600 tests and especially fitted rooms and machines, offers diagnostic and remedial service to students and others, as well as opportunity for practical experience in the use of techniques helpful in guidance work and in research.

Miss Dorothy Stratton, Ph.D., Teachers College, 1933, has recently accepted the position of Dean of Women at Purdue University. Miss Helen Moreland, who studied student personnel administration at the College last year, has just begun her work as Dean of Women at Albany State Teachers College, and Miss Lois Bennink, Teachers College, 1932, has been appointed to a similar post in the State Teachers College in Santa Barbara, California.

NEW OCCUPATIONAL PAMPHLET SERIES

The Institute of Women's Professional Relations, with headquarters at the North Carolina College for Women, has started a series of inexpensive pamphlets describing fields of work of interest to educated women. The first pamphlet in the series is *Special Librarianship as a Career*. Others will follow shortly.

CALENDAR

DECEMBER 6-8. *Annual Meeting, Taylor Society*. New York.

DECEMBER 6 AND 7. *Annual Meeting, Management Section, American Society of Mechanical Engineers*. New York.

DECEMBER 7-10. *Annual Conference, American Vocational Association*. Kansas City.

DECEMBER 27-29. *Annual Meeting, American Association for Labor Legislation*. Philadelphia.

FEBRUARY 21-24. *Meetings of National Vocational Guidance Association, American College Personnel Association, National Association of Deans of Women, and other organizations interested in personnel*. Cleveland.

Personnel Books

EDITED BY O. MILTON HALL

LABOR ECONOMICS AND LABOR PROBLEMS

By Dale Yoder. New York: McGraw-Hill, 1933. x + 630 pp. \$3.50

Reviewed by S. J. BRANDENBURG, Clark University

This is a student's book, concerned first of all, as its title indicates, with underlying principles, then with the operation of these principles in specific labor issues. Facts are cited and concrete situations described only as they amplify and illustrate the principles. The author seeks to emphasize the integration of labor principles and problems with our social institutions as a whole: a considerable part of the earlier chapters is devoted to a discussion of purposes and structure of organized society, but this institutional point of view is somewhat neglected in some of the later chapters of the work. If it be objected that the author "talks like a book," we may reply that his intended audience is chiefly college students; or if his statements of fact sometimes err in details, that their utility as illustrative material is not thereby impaired.

Earlier chapters of the book sketch the background—our customs, laws, and social institutions generally, from which labor issues emerge, and against which they are to be viewed. We are warned against viewing labor or laborers as mere abstractions and impersonal somethings; we are reminded that labor is human beings,—men or groups of men working in specific situations, that labor problems arise from the interaction of these two sets of factors, and that every labor problem is primarily a human problem. If men working are not perfectly adjusted to the situation in which their work is performed, unrest arises and a "problem" is presently confronted. Chapter V is a compact discussion of the nature, types, causes and significance of unrest.

The middle third (approximately) of the work deals with specific forms of unrest, the irritations arising from insecure and inadequate employment and income, from unsatisfactory working periods, from health and accident hazards, from the unfair competition of immigrant and convict labor, and from the variety of human responses to the presence of women and minors in industry. These chapters not only state problems, but explain various practical means for coping with these problems.

Of the remaining six chapters, three are devoted to labor organization: the chief types, the development and important existing forms, especially in the United States, and the economic, political and social policies and practices of organized labor. In an analogous way, the author discusses (in Chapters 18 and 19) employers' associations, their forms, present status, ideals, and practices: scientific management, personnel administration, etc. The final chapter describes some of the hopeful experiments made along that way to harmony and reconciliation known as Industrial Democracy.

An index which appears to be well done, abundant foot notes and references to supplementary reading, mostly secondary works, and a not very impressive list of questions at the end of each chapter, augment the usefulness of the book to the serious minded student. The work on the whole is well done: the well arranged results of much patient research and careful thought, and a forthright statement of conclusions based thereon.

THE DEVELOPMENT OF SOCIAL INSURANCE AND MINIMUM
WAGE LEGISLATION IN GREAT BRITAIN

By Helen F. Hohman. New York: Houghton, Mifflin, 1933. 441 pp. \$3.50

Reviewed by ELEANOR DAVIS, *Industrial Relations Section, Princeton University*

This is a Hart, Schaffner and Marx prize essay in economics and, to the reviewer, well deserves the honor. Starting with the "New" Poor Law in England in 1834, it traces the development of widows' and Orphans' and old age pensions, health insurance, unemployment insurance, and minimum wage laws during the past century. These subjects, diverse in many ways, are here unified by the author's concept of them as elements in a minimum standard of living.

On each subject, the book offers a wealth of information. It is fairly packed with facts and dates and statistics and charts. But it does more than record facts concerning legislation; it traces fundamental changes in attitudes and assumptions concerning poverty and dependency and shows how new and different legislation grew out of these changes. Finally, it describes developments in related fields which developed from experience with the administration of social insurance laws. In the section on unemployment, for instance, the

author prefaces a description of plans for the training and transfer of the unemployed by the statement that: "... experience again taught that the problem of the unemployed was not a simple or homogeneous one but that in addition to providing income a satisfactory scheme must be extended to include assistance in obtaining new employment and such measures as were necessary to maintain the workers' employability."

Separate chapters deal with the different types of social insurance and with minimum wage, tracing each from the harsh, deterrent philosophy of the poor laws, through the growth of democracy and an increasing sense of public responsibility for minimum standards. The author remains the impersonal scholar throughout and is content to marshal the facts and point out trends and let them speak for themselves. The book is not easy reading, but those who wish to know more about the growth of social and economic institutions in the last century of British history will find it an invaluable guide.

STATISTICAL PROCEDURE OF PUBLIC EMPLOYMENT OFFICES

By Annabel M. Stewart and Bryce M. Stewart. New York: Russell Sage Foundation, 1933. 327 pp. \$2.50

With the very probable wide extension of public employment services in this country, the publication of *Statistical Procedure in Public Employment Offices* takes on an added significance. Methods of recording applications for work and openings for workers are important because only through adequate records, which yield quickly the maximum of relevant information with a minimum time and expense, can an employment office accomplish efficiently its purpose of connecting work and worker. And with the growth of new offices it is important, for a number of reasons, that comparable and

effective systems of record-keeping be adopted.

The authors first made a detailed study of statistical experience in this country and of the methods developed after long experiment by employment exchanges of European countries. Part I of the book analyzes the statistical systems used in the countries studied. Part II consists of a detailed outline of these methods. It includes a chapter for each country visited, which gives a brief historical introduction and treats the present organization of its employment service, its statistical procedure, and the

publication of statistical reports. On the basis of this thorough analysis, the authors in Part III suggest a comprehensive and significant plan of statistical procedure for public employment offices in the United States.

This plan is devised not only to facilitate placements directly. The authors, with wider vision, have made provision for the collection and classification of data which may be used as a barometer of the "labor market" in different occupations.

SUCCESS AND FAILURE IN THE TEACHING PROFESSION

By Gladys H. Watson. New York: Department of Psychology, Teachers College, Columbia University, 1933. 99 pp., \$1.00

Reviewed by FRANCIS S. HARMON, *New York*

In this monograph the author presents the results of a carefully planned study of 58 Teachers' College students. The investigation, undertaken to sound out the possibilities of group tests for predicting success or failure in teaching, brings to light many suggestive points regarding personality, attitudes, general information, and past records as factors in success or failure.

The 58 subjects were selected by professors in the departments in which they were majoring. Thirty-nine were chosen as being most likely to succeed outstandingly, and 19 as being likely to fail in teaching. Despite much overlapping of the data from the two groups, the author feels that certain possible points of distinction are indicated. The less able group, for example, seems to have attained a less "objective adult attitude toward their parents" than the more

able group; to carry over more of the home situation into other environments; to incline more toward conservatism; and to have a stronger tendency to contradict. The more able, on the other hand, appear to excel the less able in earlier ambition for fame, present desire to be held in high regard, earlier start in professional career, and longer hours of work, regardless of salary paid.

The author very rightly stresses the tentative nature of her results and conclusions. Feeling that her own group of subjects may not be representative of the teaching population at large, she calls attention to the need for further research along the same lines. An appendix includes a suggested questionnaire, embodying items which seemed most significant in the present study.

DO COLLEGE STUDENTS CHOOSE VOCATIONS WISELY?

By Edward J. Sparling. New York: Bureau of Publications, Teachers College, 1933. 110 pp. \$1.50

Reviewed by W. P. McELROY, *Hartford House, New York*

As is frequently the case, the title of this book does not indicate its true value. The meat of this treatise is found in Chapter VI "The Vocational Fitness Scale" and Chapter VII "Results Obtained from the Use of the Scale."

Dr. Spalding has developed a scale which should prove helpful in making vocational counseling more objective. It will undoubtedly be a valuable tool for surveying large groups of students to determine which

persons are in greatest need of a counselor's services. On this point Chapter VII is quite convincing. Here is the author's description of the "Vocational Fitness Scale" as given on page 40:

"A survey of vocational guidance literature was made in order to select the criteria which were to be included in the scale. These criteria were divided into four main groups: . . . The scale was built upon a total score of 100."

	<i>points</i>
Group I, Intelligence.....	10
Group II, Educational Achievement:	
Academic average	10
Average in subjects fundamental to vocation.....	10
Group III, Economic, Social, and Educational Background for the Vocation:	
Parent's education.....	6
Economic advantage.....	4
Social advantage.....	10
Experience.....	8
Accomplishment.....	6
Proper work references.....	12
Professional interest.....	9
Group IV, Vocational Expectations:	
Plan of entry.....	8
Expected earnings.....	4
Attitude.....	3
Total.....	100

"Admittedly, the values assigned are arbitrary."

Dr. Spalding applied his scale to 888 students in Long Island University. His treatment of these results gives an interesting social analysis of the student body of this unique institution. Where possible his findings were compared with surveys of other student bodies.

The value of this scale will increase with use and the accumulation of data from other student bodies. Its application, in the near future, to a wide variety of educational institutions should yield a body of data helpful to vocational counselors. Over a period of years the follow-up of college graduates will make it possible to substitute empirical weighting for the arbitrary points now assigned—provided vocational values are not too severely distorted by the economic upheavals in our social order.

COMMON SENSE ABOUT MACHINES AND UNEMPLOYMENT

By Morris P. Taylor. Philadelphia, John C. Winston, 1933. v + 173 pp. \$1.50

Reviewed by S. J. BRANDENBURG, Clark University

Another writer here asks us to face the fundamental difficulty of the existing economic regime, namely, that while mechanization in practically all fields of economic production has brought increased output, it has not brought increased consumer purchasing power; hence the unbalance between production and consumption, with its train of human ills.

The remedy, of course, is to restore the balance by increasing consumer purchasing power. The author declares that mechanization "requires" but "does not cause immediate wage increases," and may even tend to lower wages. (p. 48). Hence his task, after a summary setting forth of the facts as to mechanization, unemployment, wages, etc., as they appear to him in different fields of economic enterprise, past and present, is to examine critically the several proposed remedies that now occupy the public mind; e.g., public works, unemployment insurance, shorter working periods, higher wage rates. While all these proposals have some merit, the real solution of

present problems must come through industry reorganizing itself, "with sufficient governmental supervision to insure against arbitrary monopolistic control by private interests." (p. 171). In an era of rapid mechanization without expansion of demand in other directions, such as we have lately experienced, our objective must be the maintenance of a constant or expanding "labor-capital ratio"; that is, real wages must increase at a rate sufficient to enable the low income groups "to continue to buy at least the same proportion of consumers' goods."

This little book is written in popular style and is readable; but spread widely over a large field it is necessarily thin, and leaves the reader not wholly satisfied.

COLLECTIVE BARGAINING THROUGH EMPLOYEE REPRESENTATION. New York: National Industrial Conference Board, 1933, 81.

Within the limits which it sets for itself this report will be useful to those seeking in-

formation about the growth and practicality of employee representation plans. It brings up to date earlier Conference Board studies along similar lines. Its weakness as a manual for corporations is that it gives too little hint of the controversial character of the problem it presumably tries to solve. Such a failure to state even the issues of the case or to record the trend of N.R.A. reaction adverse to company union efforts disclosed by referenda on them among employees, leads to a document of only fragmentary value.

IN PLACE OF PROFIT, SOCIAL INCENTIVES IN THE SOVIET UNION. By HARRY F. WARD. New York: Scribner, 1933, 460 pp., \$2.50.

This book will repay study by every executive and student interested in financial and non-financial incentives. Russian incentives operate in a non-private-profit system, and sooner or later there is much to learn about how different economic systems condition personal incentives. It is still too early, however, for a book to come out of Russia and have convincing scientific value on this whole subject. Professor Ward has assembled an admirable array of documentary material, which shows the Russians to be very much alive to the necessity of incentives. But it can hardly be called a critical evaluation. It is the work of a profound sympathizer, and its enthusiasm and zeal are persuasive. Indeed, if its zeal is discounted by a full half, the residuum of accomplishment and of plans in process, which the book sets forth, make an impressive story. And the central contention that human nature does not require a profit motive to supply incentive to economic effort is, of course, plausibly substantiated—especially to those already convinced!

PRINCIPLES OF INDUSTRIAL ORGANIZATION. By DEXTER S. KIMBALL. New York: McGraw-Hill, 1933, 460 pp., \$4.00.

In this fourth edition of his widely known work, the author brings forward new material on such subjects as mechanization of industry, factory arrangement, production control, and measures of management. This revision reinforces the book's position of leadership in the field.

THE PROGRAM FOR THE WORLD ECONOMIC CONFERENCE. The Experts' Agenda and other Documents with an Introduction by JAMES W. ANGELL. Boston: World Peace Foundation, 1933, 93 pp., \$1.00.

This volume, designed to serve as a handbook to the World Economic Conference held at London in June, 1933, summarizes under six chapter-headings the international problems discussed. Professor Angell, in a brief introduction, outlines the scope and intended significance of the conference, as well as the aims of the commission of Experts who drew up and annotated the agenda.

CAREERS AHEAD: A BOOK OF VOCATIONAL GUIDANCE FOR BOYS AND GIRLS COVERING SIXTY OCCUPATIONS. By JOSEPH COTTLER and HAROLD BRECHT. Boston: Little, Brown, and Company, 1933, 312 pp., \$2.50.

Too often boys and girls fail to realize that they have any particular interest or bent, and frequently allow themselves to drift into a vocation or profession unsuited to their abilities and tastes.

In the pages of *Careers Ahead* the High School student is led into the world's workshop to view for himself more than sixty occupations ranging all the way from brick laying to medicine. In each case he discovers for himself the amount and kind of education needed to prepare him for the job in question, as well as the future in store for the individual who follows that particular calling. The narrative style together with many illustrations in aquatone affords a realistic picture of men and women actually at work.

Though written primarily from the point of view of the high school student, this book should prove useful to parents and teachers as well, in detecting and making the most of interests and aptitudes.

SOCIAL BELIEFS AND ATTITUDES OF AMERICAN SCHOOL BOARD MEMBERS. By CLAUDE E. ARNETT. Emporia, Kansas: Emporia Gazette Press, 1932, 150 pp.

The purpose of the investigation reported in this book was to determine the

social beliefs and attitudes of American school board members who control our educational policies on the elementary, junior high school, senior high school, and junior college levels. To this end the author attempted to reveal in terms of "conservatism" and "non-conservatism" the tendencies, beliefs, and attitudes held by these officials toward some of the outstanding social, political, economic, international, national, educational, and other issues confronting American life and education today.

The results give a rather clear picture of the prejudices and social philosophies of the men who control our educational policies. Such policies must necessarily reflect many of the school board members' limitations, biases, and viewpoints. The social characteristics and qualifications of these men determine to a great extent the content, spirit, and aim of public education.

SELF-CONSCIOUSNESS AND ITS TREATMENT.

By A. A. Roback. Cambridge: Sci-Art Publishers, 1933, 122 pp., \$1.50.

Thirty-seven out of every hundred persons, it appears, consider that their greatest personal handicap in life is "self-consciousness and lack of self confidence." Yet until now little serious scientific attention has been given to the matter. Dr. Roback's little book is not primarily designed as an aid to self-conscious people; it is a scholarly treatment of the subject. Nevertheless, there is much in the book, especially in the chapter on "Treatment of Self-Consciousness" which will be helpful to people thus afflicted.

A WORK BOOK IN EDUCATIONAL PSYCHOLOGY. By Harvey C. Lehman and Stuart M. Stoke. New York: Prentice-Hall, 1933, 152 pp., \$0.80.

To bridge the gap between theory and practice in the Educational Psychology course has been one of the leading aims of the authors in preparing this work book. Seventy-two specific problems are presented, involving such general topics as

heredity and environment, individual differences, motivation, efficiency in learning and the like. Appended reading lists lead the student to formulate for himself answers to the problems which have been raised.

A POINT SCALE OF PERFORMANCE TESTS.

Volume II: The Process of Standardization. By Grace Arthur. New York: Commonwealth Fund, 1933, 106 pp., \$1.50.

Dr. Arthur in this volume completes her description of the construction and standardization of a non-verbal scale of intelligence tests. This scale, she feels, demonstrates that "intelligence as measured by the Binet scales can also be measured without recourse to the two types of abstract material known as words and numbers."

Statistical data based upon the testing of 2,000 school children with an age range from 5 to 16 years are presented. The process of standardization takes into account the discriminative value of a given test for each age level; and the process of arriving at a total score from which the I.Q. may be calculated is explained. Standardization of two alternate forms greatly increases the scale's usefulness.

HABITS: THEIR MAKING AND UNMAKING.

By Knight Dunlap. New York: Live-right, 1932, 326 pp., \$3.00.

This book is an effort at scientific popularization regarding present knowledge of habits and habit formation. Much that is familiar is reassembled here. The new and more controversial findings about how poor habits are to be broken will come as a shock to many students who will doubt if satisfactory proof is adduced. Readers familiar with the clinical work of Dr. F. M. Alexander, especially in his most recent book, *The Conscious Use of the Self* (Dutton, 1933), will be especially sceptical of the validity of this discussion of methods of changing bad personal habits. The volume as a whole, however, will form a useful addition to the literature of the subject. The bibliography is excellent.

New Books

- THE AMERICAN FEDERATION OF LABOR: HISTORY, POLICIES AND PROSPECTS.** By Lewis L. Lorwin and Jean A. Flexner. Washington, D. C.: Brookings Inst., 1933, 592 pp., \$2.75.
- AMERICAN LABOR AND THE NATION.** By Spencer Miller, Jr. Chicago: Univ. of Chicago Press, 1933, \$1.00.
- AMERICA SWINGS TO THE LEFT.** By Alva Lee. New York: Dodd, Mead, 1933, 127 pp., \$1.50.
- AN OUTLINE OF GENERAL PSYCHOLOGY.** By Robert H. Gault and Delton T. Howard. New York: Longmans, 1933, 459 pp., \$3.00.
- BIBLIOGRAPHY OF TIME STUDY ENGINEERING.** By Society of Industrial Engineers. New York: H. W. Wilson, 1933, 63 pp., \$1.50.
- COLLECTIVE BARGAINING THROUGH EMPLOYEE REPRESENTATION.** New York: National Industrial Conference Board, 1933, 89 pp., \$1.50.
- THE DEVELOPMENT OF SOCIAL INSURANCE AND MINIMUM WAGE LEGISLATION IN GREAT BRITAIN.** By Helen Fisher Hohman. Boston: Houghton, 1933, 462 pp., \$3.50.
- ECONOMIC RECONSTRUCTION LEGISLATION OF 1933.** New York: National Industrial Conference Board, 1933, 226 pp., \$2.50.
- FINDING A JOB.** By Roger W. Babson. New York: Revell, 1933, 191 pp., \$1.50.
- FOUNDATIONS OF PSYCHOLOGY.** By Jared S. Moore and Herbert Gurnee. Princeton: Princeton Univ. Press, 1933, 306 pp., \$3.00.
- GREAT MEN OF SCIENCE: A HISTORY OF SCIENTIFIC PROGRESS.** By Philipp Lenard. New York: Macmillan, 1933, 409 pp., \$3.00.
- LABOR PROBLEMS IN AMERICAN INDUSTRY.** By Carroll R. Daugherty. Boston: Houghton, 1933, 977 pp., \$3.50.
- MOLDERS OF THE AMERICAN MIND.** By Norman Woelfel. New York: Columbia Univ. Press, 1933, 316 pp., \$3.00.
- MORE POWER TO YOU!** By Walter B. Pitkin. New York: Simon & Schuster, 1933, 309 pp., \$1.75.
- OCCUPATIONAL TRENDS IN MINNESOTA.** By Alvin H. Hansen and Tillman Sogge. Minneapolis: Univ. of Minn. Press, 1933, 29 pp., \$0.50.
- PSYCHOLOGY WORK-BOOK; to accompany Gardner Murphy's General Psychology.** By E. S. Marks and others. New York: Harper, 1933, 97 pp., \$0.50.
- RECENT ECONOMIC CHANGES AND THEIR MEANING.** By Harold F. Clark. Columbus: American Educ. Press, 1933, 23 pp., \$0.15.
- SOCIAL CONSEQUENCES OF PROLONGED UNEMPLOYMENT.** By Jessie A. Bloodworth. Minneapolis: Univ. of Minn. Press, 1933, 16 pp., \$0.50.
- THE THEORY OF UNEMPLOYMENT.** By A. C. Pigou. New York: Macmillan, 1933, 319 pp., \$5.00.
- THE THIRD AMERICAN REVOLUTION: AN INTERPRETATION.** By Benson Y. Landis. New York: Association Press, 1933, 163 pp., \$1.75.
- UNEMPLOYMENT AND THE CHILD.** By Save the Children Fund. New York: Longmans, 1933, 136 pp., \$0.90.

Current Periodicals

PREPARED BY LINDA H. MORLEY, *Industrial Relations Counselors, Inc.*

ACCIDENTS

SHROSBREE, G. (Manager, Safety and Welfare Dept., Austin Motor Co.). Relation of accident proneness to length of service. *Industrial Welfare and Personnel Management*, Aug. 1933, vol. 15, p. 7-8.

Graphic analysis of accident records of the Austin Motor Company for 1931, 1932, and first period of 1933, showed that the "service groups" with highest accident rates were those of over two years' service, which indicates that "familiarity" is a greater factor in causing accidents than all other factors which are supposed to react unfavorably on a new employee.

EMPLOYMENT

GIVENS, MEREDITH B. Employment during the depression. *Bulletin* (National Bureau of Economic Research), June 30, 1933, no. 47, p. 1-5.

Statistics show greater stability in the financial, clerical, public utility and service employments as compared with the industries engaged in physical production and transport. Charts show employment in the major industrial groups 1929-1933, by industry, and for the manufacturing groups, by district. The relative decline in employment and changes in weekly hours of factory work in two depressions are also given.

EXECUTIVES

KELLEY, PEARCE C. (Assistant Professor of Business Administration, University of Arkansas). Selecting executives. *Personnel*, Aug. 1933, vol. 10, p. 8-27.

Describes devices in use for discovering and evaluating potential executive ability within an organization, and methods of analyzing executive positions. The use of

job analyses in selecting executives, as well as personnel records, tests, rating scales, progress reports, interviews, etc., is also discussed.

MOONEY, JAMES D. (President, General Motors Export Company). Organizing the executive group. *Personnel*, Aug. 1933, vol. 10, p. 3-8.

Outlines structural principles of organization, emphasizing co-ordination as the determining principle and beginning and end of all organized effort. Distinguishes between two forms of co-ordination, the first of which is operated through leadership and delegation of authority, the other being operated through the service of knowledge.

STEVENSON, JOHN A. (Vice President, Penn Mutual Life Insurance Co.). Training executives. *Personnel*, Aug. 1933, vol. 10, p. 27-31.

Mr. Stevenson thinks that the training program for executives should develop and train executives now on the job and evolve a technique for finding and developing potential executives. Describes fourteen-day training course of Penn Mutual Insurance Company, held for their managers and supervisors.

INCENTIVES IN OFFICE WORK

KENT, W. J. (Organising Secretary of Management Research Groups). Incentives for office workers. *Industrial Welfare and Personnel Management*, July, 1933, vol. 15, p. XVIII-XXII.

Discusses the foundation on which lasting benefits from incentives might be built. These are: informing office workers of the value to the community of the product being marketed; having workers

feel that their positions are secure and that wage scales and rates are absolutely fair; providing working conditions where natural rather than artificial lighting conditions exist; and providing enough work. Describes also such incentives as salary increases, promotions, etc.

INDUSTRIAL RELATIONS

BALDERSTON, C. C. (Professor of Industry, Wharton School of Finance and Commerce, Univ. of Pennsylvania). Recent trends in personnel management. *Management Review*, Sept., 1933, vol. 22, p. 259-269.

Recent tendencies in the activities of personnel departments show: increased emphasis upon relief activities; expenses of personnel department reduced by elimination of company contributions to employee activities; less essential routine records eliminated, as well as many company magazines and training courses; turnover (other than layoff) has been negligible; credit union sentiment increased while employee stock purchase plans have come to be considered dangerous. In addition, there has been a unification of financial plans for employee security, the increased centralization of guidance of personnel activities, and a tendency to decentralize responsibility for training, with emphasis on training for the job, and a growth in the idea of retraining of employees.

MAYO, ELTON (Associate Professor of Industrial Research at Harvard Univ.). Industry and social change. *Industrial Welfare and Personnel Management*, Aug. 1933, vol. 15, p. 21-22, 24.

Gives results of experiment by the Western Electric Company, carried on over a period of six years among a group of workers assembling telephone relays, to discover what constituted good conditions of work and what the company policy should be regarding workers in a department. Increased wage rates, introduction of rest pauses, lunch periods, shortened hours, etc., resulted in increased production for the experimental group.

Concludes that the most important change, however, was one in the mental and social atmosphere of the group. Believes that we "cannot know what monotony is in industry because there are so many factors concerned, none of which is really the character of the job itself."

MEDICAL SERVICE

BRITTON, J. A. (M.D.; Supervisor of Medical Service, International Harvester Co. Preventive medicine in industry—need, principles and practical suggestions. *Industrial Medicine*, July, 1933, vol. 2, p. 1-3.

Industry is losing at least 25% of its workers before they reach 35; 61% before 45, and at least 90% before 55, due, in most instances, to serious physical defects and diseases. Author thinks the first thing in industrial medical service is to get the worker to think about the value to himself of good health, and the advantages of knowing his own physical condition. Believes industrial medical department serves best when it acts as a clearing house—a place for diagnosis and advice as to where proper treatment may be obtained.

NATIONAL OCCUPATIONAL CONFERENCE

KELLER, FRANKLIN J. National Occupational Conference. *Educational Record*, July, 1933, vol. 14, p. 346-353.

This Conference plans to function as a service institution, helping every agency in related occupational fields to accomplish the purposes for which it set itself. In this "clearing house," information will be available regarding techniques of guidance, of occupational adjustment, of individual analysis, relation of individual to his job, etc. Publication of "Occupations, the Vocational Guidance Magazine" is also part of the program. Field service operates through correspondence and personal consultation.

PENSIONS

STONE, R. W. (Associate Professor of Industrial Relations in School of Business, University of Chicago). Industrial pen-

sions. *Journal of Business*, July, 1933, vol. 6, Pt. 1, p. 240-246.

Specific pension plans are not discussed in this article, but rather the problems which they have been evolved to meet. Provision for older workers is becoming increasingly difficult for industry. The proportion and actual number of persons over 45 have increased markedly during the past decade. Mechanization of industry has tended to displace the older worker. Increasing urbanization of the population entails a shift to occupations in which the disabilities of the older ages are more serious employment handicaps. Records of relief agencies show an increase in the number of superannuated workers among dependents, indicating that difficulties of holding employment offset the increase in real wages. Students of population expect a large increase in the proportion of persons over 45 in the next twenty years, and urbanization of the population and mechanization of industry will probably increase.

Part of the problem can be met by retraining in industry and adequate job analysis; but preventive measures will not eliminate the whole problem. To find satisfactory relief measures fraternal, trade-union, philanthropic, employer and state methods so far devised should be carefully analyzed. The author refers to two studies which are a contribution toward such analysis.

PROFIT SHARING

National Industrial Conference Board, Inc. Changing sphere of profit sharing. *Conference Board Service Letter*, Aug. 30, 1933, vol. 6, p. 57-59.

Outlines briefly development of the profit-sharing idea and the types of plans in use for executives and supervisors in recent years. Believes profit sharing is now being examined as "a possible agency for correcting an apparent lack of balance in the economic system," whereby wage rates are determined by conditions of supply and demand, and labor is granted additional compensation as a share of business income when, and if, earned by each particular plant.

TRADE UNIONS

LORWIN, LEWIS L. (Institute of Economics, Brookings Inst.). Challenge to organized labor. *Current History*, Sept. 1933, vol. 38, p. 669-675.

Dr. Lorwin presents the view that if we are to have a controlled economy neither the old type of trade unionism nor the old system of unorganized industry are possible. A new system to meet the new scheme he terms quasi-public unionism. He goes into the historical background of the present situation and the gradual decline of the old form of trade unionism since 1925. Economic trends paralleling political and social changes are producing an attitude where "there is less and less tolerance on the part of all people for obstructive tactics on the part of employers or workers. . . . Opposition is no longer valued as a constructive force. . . . Impatience with the political impasse created by the indefinite struggles of conflicting economic and social groups feeds the movement toward executive and dictatorial forms of government, even in countries traditionally devoted to political democracy." However, in every step in the direction of economic control by enforcement of codes of fair trade and labor practice, there is need for co-operation from organized workers, and some of the unions are beginning to realize that to play their part best they "must go into partnership with the government . . . must make changes in structure and functions which would transform them into quasi-public organizations."

TRAINING

MOGENSEN, ALLAN H. (Consulting Editor). How are you going to train your new operators? Don't take your best men off production to train green help; the process chart offers a quicker, cheaper, and better way. *Factory Management and Maintenance*, Sept. 1933, vol. 91, p. 351-353

Simple instructions, in process chart form, are given to each new operator. After the worker follows the instructions several times, he is able to work more

rapidly and he secures not only proper performance for each job but he begins to think about "motion economy." Frequently the worker has given valuable suggestions for improving the methods used. Another value of the chart has been found in comparing similar operations between plants and evaluating differences. Samples of "Instruction Sheet for Assembling," and "Progressive Detail of Motions," are given.

VITELES, MORRIS S. (Department of Psychology, University of Pennsylvania; Director of Personnel Research, Phila. Electric Co.). Training and unemployment. *Human Factor*. Sept. 1933, vol. 7, p. 307-311.

Believes training both old and new workers to be able to adapt themselves to new machines, new processes, new methods of work and new jobs would help in solving the problems of unemployment. Thinks that psychological problems are involved in developing such adaptability, and that study of these problems is necessary in formulating an adequate philosophy, and suitable methods of vocational training and re-education, which will aid in these necessary readjustment processes.

UNEMPLOYMENT INSURANCE

RUBINOW, I. M. Movement toward unemployment insurance in Ohio. *Social Service Review*, June, 1933, vol. 7, p. 186-224.

The report of the Ohio Commission on Unemployment Insurance issued in the fall of 1932 is the basis of this article.

Issued in two volumes, part 1 of the report gives conclusions and a recommended bill; part 2 contains results of

various studies arranged for by the Commission, including actuarial studies.

The Commission points out that public and private relief have broken down and concludes that insurance in the better method, but such insurance must be compulsory. It advocates a system by which the greater proportion of persons working for wages or salaries under a specified amount be insured against loss of wages from unemployment. The employees included and their employers would pay a premium to the state insurance fund. The benefit paid would be for sixteen weeks, with a maximum of \$15.

The article discusses the provisions of the bill, and the business, economic, political and technical objections to such a scheme of unemployment insurance.

Unemployment insurance in 1933 legislatures. *Social Security*. July-Aug., 1933, vol. 7, p. 1-2.

In 29 state legislatures and Congress, 105 unemployment insurance bills were introduced and eight commissions reported favorably on unemployment insurance. Of the 105 bills introduced, 22 called for investigating commissions and 62 made specific provisions for unemployment insurance. Ten followed the Ohio plan, which requires contributions from workers and employers, 24 provided for other forms of compulsory pooled insurance, 20 followed the Wisconsin plan, and 8 proposed other plans with segregated company or industry reserves. Most of the bills provided benefits of 50% of wages, but set maximum of \$10-\$15 per week for ten to sixteen weeks in one year. All bills set waiting period for one to three weeks. No state adopted a system of unemployment insurance in 1933.

Twelfth Autumn Conference

Personnel Research Federation

By FRANCIS L. HARMON, *New York*

MEASURING abilities, determining occupational trends, predicting the future of labor unions, describing the personnel activities of the Tennessee Valley Authority, standardizing placement practices, setting up adequate employer-employee relationships—in fact, the entire range of problems that confront those who are engaged in furthering more effective occupational adjustment—these were the fascinating topics that captured the attention of the men and women who were fortunate enough to attend the Twelfth Annual Autumn Conference of the Personnel Research Federation on November 16 and 17 at the Hotel Astor in New York City." In this way did our gracious contemporary, *Occupations: The Vocational Guidance Magazine*, describe the Personnel Research Federation's latest conference.

The Thursday morning program opened in two sections. The first, under the chairmanship of Owen E. Pence of the National Council of Y. M. C. A.'s, was devoted to problems of vocational adjustment. Mr. Pence, in welcoming the members, stressed the significance of scientific study of occupations and vocational adjustment. "Mapping the Field of Vocational Adjustment" was the sub-

ject of the first paper of the morning, presented by Franklin J. Keller, Director of the National Occupational Conference. Dr. Keller outlined some of the leading objectives and procedures in this field, describing how the groundwork is being laid for future planning and future advances along sound lines. A series of charts added vividness to the discussion. The second paper, describing the Adjustment Service experiment, was prepared by Jerome H. Bentley, Director of the Adjustment Service of New York. In the absence of Mr. Bentley, this paper was presented for him by Garret L. Bergen.

Mr. Bentley's paper served as an introduction to the three round table discussions which immediately followed. Describing the aims of the Adjustment Service and the conditions which originally called it into being, he showed that the organization represents a practical experiment in a most important and vital phase of personnel research.

Three leading aspects of Adjustment Service work were considered at the several round tables. In each case a member of the Adjustment Service provided a starting point for the discussion by describing the activities of that organization. Training activities were described by Layton

S. Hawkins, thus leading to an exchange of ideas and experience on the place of training and education in adjustment. Donald S. Bridgman, of the American Telephone and Telegraph Company, presided at the first round table.

The place of diagnosis in adjustment was the subject at the second round table, at which Mary H. S. Hayes, of the Vocational Service for Juniors, presided. Garret L. Bergen, of the Adjustment Service, offered a short description of the extensive diagnostic program carried out with clients there. The relative merits of a number of psychological procedures were canvassed in this connection, emphasis being placed upon reliability and workability from the practical point of view.

J. F. White, of the American Telephone and Telegraph Company, led the discussion at the third round table, where the place of leisure time in adjustment was considered. This phase of the Adjustment Service's program was described by E. Dana Caulkins, who showed how unemployed adults are being guided in working out for themselves programs of education and recreation.

Six papers were read before the General Session at the Thursday morning meeting, at which J. W. Dietz of the Western Electric Company presided. Three of these are published in this issue of the JOURNAL. Joseph V. Hanna, of New York University, described a study the results of which seem to indicate a decided relationship between earning power and emotional stability. Johnson O'Connor, of the Stevens Institute of Technology, reported a study of the relationship

between students' vocabularies and their college success. Improvement in scores on vocabulary tests administered at the beginning and end of the freshman year was found to correlate with academic standing during the second year, thus indicating the possibility of a consciously increased vocabulary as a factor in school success.

Two papers by Paul Horst and Robert F. Lovett, of the Procter and Gamble Company, dealt with different aspects of the same general problem; namely, the selection of sales personnel by means of objective tests. Mr. Horst, in discussing the question of selecting items for such a test, described a new statistical technique, which he called the method of "successive residuals." Mr. Lovett discussed the relative value of such measures as mental alertness, personality traits and the like in selecting salesmen and sales managers.

"Characteristics of Life Insurance Salesmen" was the title of the paper in which Paul S. Achilles, of the Psychological Corporation, presented some interesting preliminary results of a study now being conducted. This was followed by a brief discussion led by Marion A. Bills, of the Aetna Life Insurance Company. The final address of the morning was made by Rex B. Hersey, of the University of Pennsylvania. "The Emotional Status of German Railway Shop Workers: Relations to Indices of Health and Output" was the subject of Professor Hersey's paper, which described the relationship found between such physiological measures as red blood count and systolic blood pressure and output in mental and physical work.

Two addresses distinguished the luncheon meeting. L. J. O'Rourke, Director of Personnel Research for the United States Civil Service Commission, described some personnel aspects of the Tennessee Valley Authority; and Professor Sumner H. Slichter, of the Harvard Graduate School of Business, discussed the future of trade unionism. The selection and training of intelligent young men and women for their jobs and for a healthy community life was the theme of Dr. O'Rourke's address. As he expressed it, the Tennessee Valley Authority visualizes its task not merely as a contract in dam building, but as an opportunity to contribute to the life of the people in the valley. The effects of changing economic conditions, and particularly the question of collective bargaining under the provisions of the National Recovery Act were treated by Professor Slichter with the authority of an expert in the field of trade unions. In Professor Slichter's opinion the N. R. A. has acted to strengthen unions, proof of which is found in the fact that the A. F. of L. has grown more in the past five months than in the last thirteen years. Pronounced inflation, he believes, would still further stimulate unionism, as will the attempt to enforce the new industrial codes.

The afternoon session was given over to the question of Employer-Employee Relations Today. R. C. Nyman, of the Yale University Institute of Human Relations, described some of the difficulties and conflicts growing out of an attempt to introduce improved methods in a cotton weaving factory. Under the chairmanship of Ordway

Tead, there followed a group discussion of some of the questions raised by Professor Slichter in his address. The discussion was opened by Mary van Kleeck, of the Russell Sage Foundation, who urged investigators to seek rather than avoid research on controversial subjects. Such questions as collective bargaining, for example, have been too much neglected in the past, simply because they are centers of industrial and social conflict. A scientific attitude on the part of students of industrial problems, and the pooling of knowledge from all related fields will aid materially in this connection. The need for new methods of measuring industrial changes, in terms of their effect upon standards of living rather than in terms of prices was also stressed.

Whiting Williams emphasized the importance of the differential between the wages of skilled and unskilled labor. Neglect of this factor, or the attempt to minimize the differential by wholesale wage-fixing, he believes, are primary causes of strikes.

The remainder of the discussion was taken up largely in debating the question as to which side should take the initiative in inaugurating employer-employee relationships.

The dinner meeting on Thursday evening was held jointly with the Personnel Club of New York and the Metropolitan Section of the Taylor Society. Marie Reith, of the New York Edison Company, presided at this meeting. W. Frank Persons, Director of Employment Service in the United States Department of Labor, spoke on "The National Re-employment Service and its Relation-

ships." The development of a plan for the clearance of labor between states was said by Mr. Persons to be the ultimate aim of the United States Employment Service. Through the coöperation of the Commissioners of Labor in the separate states it is planned eventually to absorb the temporary re-employment agencies into permanent state employment services. Meanwhile coöperation between the re-employment service and the federal relief forces has resulted in the solution of many problems which originally appeared highly intricate. The lively discussion which ensued, under the leadership of Louise Odencrantz, bore witness to the timeliness and interest of Mr. Person's subject.

The public employment service continued as a leading topic in the Friday morning session which opened with two papers on this question. Charles H. Howard, of the Public Employment Center of Rochester, contributed an excellent account of certain aspects of the program carried out there. William H. Stead, Associate Director of the United States Employment Service, spoke on "The Development of Standards in the Public Employment Service." Both these articles appear in this number of the JOURNAL.

Following extended discussion two more papers were read. O. Milton Hall, of the Personnel Research Federation, described a study of the effects of unemployment and the fear of unemployment on the social attitudes of a group of engineers. Irving Lorge, of Columbia University, presented some findings of a ten-year investigation of the validity of certain tests for predicting success in life work.

The Friday afternoon meeting was held in two sections; one dealing with occupational trends, and the other with the measurement of mechanical ability. Gladys L. Palmer, of the University of Pennsylvania, began the discussion of occupational trends with an intensive analysis of the make-up of ten occupational groups showing the largest labor surplus in a Philadelphia public employment office. Age, sex, race, and education were the leading factors treated by Dr. Palmer. Walter V. Bingham and Charles S. Slocombe, of the Personnel Research Federation, discussed the problem of ascertaining the absorptive capacity of various occupations. The need for information more comprehensive than census returns and the importance of taking a long-time view of occupational trends were stressed in this report. A series of charts, presented by Dr. Bingham, showed graphically many changes in the occupational distribution of the working population. The value of data of this kind as an aid in the vocational counseling of the young can scarcely be over-stated. Those interested in reading the complete reports of Drs. Palmer and Bingham will find them in the February number of *Occupations*.

In the group discussion that followed, interest centered chiefly around recent trends in specific occupations and particular localities. Examples of such trends were cited. The necessity of distinguishing between permanent and merely temporary changes was pointed out by Dr. Slocombe.

The second section of the Friday afternoon session, directed by Morris S. Viteles, of the University of Penn-

sylvania, listened to three papers dealing with mechanical ability tests. Millicent Pond contributed results of a comparative study of a number of such tests, the results of which seemed to indicate a low predictive value. Emily Burr and Zaida Metcalfe described a shortened form of the I. E. R. Girls' Mechanical Assembly Test. A brief general discussion dealing with the doubtful validity and practical

value of such measuring devices brought the meeting to a close.

Those who attended the Conference were rewarded with a renewed appreciation of the scope and significance of their work; a re-orientation towards basic problems; and a general stimulation of thinking in terms of what has already been accomplished and the vast field that yet remains to be explored.

Selecting Sales Personnel

The Significance of Various Types of Test Material

By R. F. LOVETT AND M. W. RICHARDSON, *Personnel Research Department,
The Procter & Gamble Company*

A test of sales ability and one of sales managerial ability were constructed empirically by relating about 900 items to a number of criteria of success. Items which did not differentiate between good and poor salesmen were discarded. Retest reliability of each test was .74. The correlation between sales and sales managerial ability was only .30.

IN A selection research project, certain aspects of which we shall describe, the problem was to construct two tests. One of these tests was to be designed to select men of good routine sales ability, and the other to select men who would have sales managerial ability.

Several special circumstances of this problem must be noted before discussing the procedure and findings. The group of approximately 650 men of the sales organization involved were heterogeneous with respect to age, schooling, years of experience, grade of job held in the Company, and even in the job itself, since there are certain differences in job requirements between north and south, east and west, and between city and country territory.

Tests had been used since 1923 to aid in the selection of salesmen; this means that the group upon which the new tests were to be standardized had already been pre-selected, especially in the direction of eliminating men of rather low mental alertness. The significance of this point will be con-

sidered later. It is sufficient now to point out that insofar as any given kind of test material had done effective work in our old selection procedure, the same kind of material might be expected not to function as well in the new battery.

At the outset it was not assumed that even an excellent order of sales ability necessarily carries with it ability to manage men in a unit of the sales force. It was therefore considered the safest procedure to construct these two tests in a thoroughly empirical fashion; that is, we would make a rigid check on the contribution of every test item or element to the selection of the two kinds of men we needed on our sales force. This is not to say that we completely disregarded the usual formulations of traits of good salesmen and of good sales executives. Our point of view was simply that primarily we wanted to make tests which would measure sales ability and sales managerial ability as well as possible. No traits were to be measured as such, but if it should develop that a

sufficiently large block of test material seemed to have immediate reference to some sensible personality trait, there would be ample justification for capitalizing such a finding.

In the preliminary choice of test material to be tried out on our sales group, several considerations were kept in mind. First, material was included because previous research in the Company had indicated its usefulness. Second, some of the material included in the trial battery was similar to that reported as successful by investigators in this field. Third, some material was included because it seemed consistent with sales or managerial traits, as currently formulated. Fourth, the test materials were of the sort that could be easily and accurately scored. As far as possible, the material chosen was to be challenging and interesting. Mental alertness material was selected from a number of widely used tests and adapted to suit our needs. Personality items which might seem objectionable to business men were left out or changed to a more suitable form. A total of approximately 900 items, meeting the above specifications as nearly as possible, were assembled for preliminary try-out. A rough classification of these items is as follows:

	<i>Number of items</i>
Mental Alertness.....	247
Business Information....	164
Personality.....	494
Social Intelligence....	101
Dominance-Submission	49
Social Attitudes (home-	
made).....	25
Personal Inventory....	257
Interest.....	62

Six members of the Personnel Research Department, operating under

uniform instructions, administered the tests to groups varying in size from seven to forty-five men. About half the tests were given in four-hour forenoon sessions and half in four-hour afternoon sessions.

Two different sets of material were given to alternate men in order to try out twice as much material in the time at our disposal. The total testing time was, therefore, about eight hours, although a number were able to complete their forms in considerably less time.

The plan of research called for the checking of the effectiveness of every item in the trial test battery against several criteria. In this study no attempt was made to combine the separate measures of salesmen's efficiency into a single number. The various criterion elements used separately as measures of sales efficiency were:

Descriptive Rating Scale

Paired Rating Scale

Confidential Report (a rating of job adjustment, personality difficulties, etc.)

Percentage of Quota Sold

Percentage of Dealers Sold

Cost of Selling per Box

The Descriptive Ratings were made by three superiors of each man on two separate forms standardized for the purpose.¹ The Paired Ratings were made by two or three superiors of each man.² The Confidential Report, a measure of job adjustment, was supplemented by Pension & Benefit rec-

¹ Richardson, M. W. and Kuder, G. F. Making a Rating Scale that Measures. *Person. J.*, 1933, 12: 36-40.

² Uhrbrock, R. S. and Richardson, M. W. Item Analysis. *Person. J.*, 1933, 12: 141-154.

ords, which give histories of absence from the job by reason of illness. These various indicators of selling ability agreed with one another fairly well, even though they were independently made as far as possible.

The criterion of capacity for promotion was made up of the following elements:

- (1) Ratings periodically made as a part of regular check-up of the progress of certain men in the sales group who are considered to be material for promotion;
- (2) Promotions actually received by the men.

Ability to sell was not directly considered as a factor in managerial ability, although it probably affected some of the ratings of promotional capacity, and doubtless was considered in making promotions. Nevertheless, subsequent results show that sales ability and capacity for promotion are correlated only to the extent indicated by an r of .30.

The responses to all items in the trial battery were punched on Hollerith cards, together with the eight criterion elements described above. Every card contained also the code number of the man whose record was punched, the number of years of schooling, and provisions for isolating men by grade, type of job, etc.

In the actual work of test construction, the cards were sorted by machine upon a certain item response. Those cards with the same item response were tabulated upon all of the criterion elements named above, and upon schooling. The latter was included to see if it would be possible to find items which would predict success by the several

criteria, and, at the same time, not be affected by schooling. This was done in the hope of eliminating the rather valid objection that industrial test results are affected by schooling independently of differences in job efficiency. It proved to be impossible to find enough good items that were unaffected by schooling, and another device was finally adopted to correct for the effect of different amounts of schooling.

The selection of test items considered good was done by inspection of the differences in average criterion scores of those who responded one way and those who responded another way on the item. Thus, if the answer A had consistently higher scores on the two rating scales, a better job adjustment score, higher per cent of quota sold, lower cost per box of selling, higher per cent of sales made to dealers than answer B, the item would be an excellent one to include in a test for selection of routine salesmen. In practice no such perfect agreement could be found for many items, and it was necessary to adopt the device of seeing that the item would be selective for as many as possible of the several criterion elements. In general, no item was selected which did not show differences on both Paired and Descriptive Rating Scales, or which showed any reversal of expected effect on the less reliable criterion elements, such as the sales records or the adjustment score. All items for the sales test were selected before the choice of items for the sales managerial ability test was made. The selection of the items for the latter was made without reference to the criterion scores relating to rou-

tine sales ability; only the criteria of promotional capacity were used.³

In all cases, items were selected for the tests only because they tended to predict either sales ability or sales managerial ability. Since items were at this stage known to the test technician only by number, there was no tendency to choose an item because it looked "good" or happened to belong to some favorite type of items. These items are now being studied by the method of successive residuals described by Mr. Horst in this number of the Journal. His results will be reported later.

After the items for each of the two tests were selected, they were assembled into a form convenient for administration and use. The validity coefficients for each of the tests were then calculated and found to be .4 for sales ability and .5 for managerial ability. On retest the reliability coefficients of both tests proved to be .74

The scores on the sales test are converted to an index, the range of which is from 50 to 150, with 100 as the median. Table 1 shows the relation of the test scores of the standardization group to ratings of success. A follow-up of the effectiveness of this test in selecting new men is now under way.

The sales managerial test, which is scored in like manner, gave the validity check shown in Table 2. Table 3 gives the results with an additional group of 153 men, including 49 of the standardization group.

The number and per cent of items

³ For a technical reason items having about the same percentage of response in the expected direction were considered at one time.

TABLE 1

Relation of index of sales ability to ratings of success

	PER CENT BELOW AVER- AGE RAT- INGS	PER CENT ABOVE AVER- AGE RAT- INGS
Sales Index above 125.....	25	75
Sales Index 101-125.....	38	62
Sales Index 75-100.....	61	39
Sales Index below 75.....	84	16

TABLE 2

Relation between promotional ratings and scores of standardization group on test of sales managerial ability

	PER CENT WITH TEST INDEX LESS THAN 100	PER CENT WITH TEST INDEX 100 OR MORE
Promotional Group B (10 cases).....	20	80
Promotional Group C (39 cases).....	58	42
Non-promotional men (226)...	90	10

TABLE 3

Relation between promotional ratings and all scores on test of sales managerial ability

	PER CENT SECUR- ING A TEST INDEX OF LESS THAN 100	PER CENT SECUR- ING A TEST INDEX OF 100 OR MORE
Promotional Group A (8)....	12	88
Promotional Group B (23), (includes 10 of standardiza- tion group).....	35	65
Promotional Group C (122), (includes 39 of standardiza- tion group).....	46	54

of various types which proved to be prognostic are given in Table 4. In considering the yields by types of items conclusions must be drawn with care, since the preliminary choice of items was perhaps not equally good for all kinds.

The yield of mental alertness items was great (28 per cent) in the test for sales managerial ability. In the test for selling ability, however, the yield was approximately two-thirds as great

given a higher yield with the promotional group, inasmuch as most of this material came from fairly easy clerical tests.

In general, the yield of personality material was very high (29 per cent) in the test for sales ability. The home-made material on social attitudes, the personal inventory material, and the dominance-submission material gave very high yields in the test for sales ability, while the social intelli-

TABLE 4
Yield by types of items

	NUMBER OF ITEMS STUDIED	YIELD FOR TEST OF SALES ABILITY		YIELD FOR TEST OF SALES MANAGERIAL ABILITY		TOTAL YIELD	
		Num-ber	Per cent	Num-ber	Per cent	Num-ber	Per cent
Mental Alertness.....	247	44	18	69	28	113	45.6
Business Information.....	164	25	15	8	5	33	20.1
Personality							
Social Attitudes (home-made).....	25	9	36	5	20	14	56
Personal Inventory*.....	132	56	42	12	9	68	52
Dominance-Submission.....	49	19	39	4	8	23	47
Social Intelligence.....	101	14	14	12	12	26	26
Interest.....	62	10	16	2	3	12	19
Total Personality.....	369	108	29	35	9	143	38

* A group of personal inventory items which were omitted from the item analysis were scored in another manner and are included in the test for sales managerial ability, because of their high predictive value.

(18 per cent). This may be accounted for by the fact that, as previously mentioned, a test of mental alertness had been used since 1923, and, therefore, the group was comparatively homogeneous in this respect.

While business information material produced a good yield (15 per cent) in the test of sales ability, the yield for the managerial test was very low (5 per cent). There is reason to believe that business information material of greater difficulty would have

gence and interest material produced only fair yields. The introvert-extrovert categories were not found very useful as indicators of either sales or sales managerial ability.

In the item analysis for the test of sales managerial ability, comparatively little (9 per cent) of the personality material proved useful. The home-made social attitude items held up best. The personal inventory group (A), when scored for aggressiveness with a special set of item weights,

proved to have such high predictive value that the entire group of items was included in the sales managerial test. In the social attitude items, the salesmen's responses tend to be more conventional than those of promotional men. In many cases the typical response for the salesmen was the reverse of that of the promotional men.

Of the approximately 300 items which are included in the two tests as a result of the item analysis, only five are common to both. This is consistent with the low correlation found between sales and sales managerial ability.

CONCLUSIONS

(1) Mental alertness should have a prominent place in selecting for promotion; less for routine sales.

(2) Personality items should have a prominent place in selecting for sales ability; less for sales managerial ability.

(3) Home-made items deserve a try-out in selection programs.

(4) Routine salesmen tend to be more conventional in responses to social attitudes than are promotional men.

(5) Sales and sales managerial ability are fairly distinct and independent— $r = .30$, approximately.

Increasing the Efficiency of Selection Tests

BY PAUL HORST, *Personnel Research Department, The Procter & Gamble Company*

By the use of a new statistical procedure, called the "method of successive residuals," a sales ability test consisting of 117 objective items has been developed. This test, when given to a group of specialized salesmen, was found to correlate .975 with measures of success on the job, and to have a reliability coefficient of .93.

IN DEVELOPING tests for personnel selection it is necessary first to obtain measures of success on the job. These measures must be made on persons already employed and thoroughly tried in the type of work for which the test is to be developed. The test is efficient to the extent that the scores made on it arrange the employees in the same order as do their measures of success on the job.

One of the best known procedures for selecting personnel tests in industry is to administer a series of tests to employees whose measures of success on the job are known, and to select that test which gives the highest correlation with these measures of success. In general, the higher this correlation the higher will be the predictive efficiency of the test. As a rule, however, it is difficult to find any single ready-made test which will predict the measures of success with sufficient accuracy.

Usually it is possible to select several tests which, in combination, predict the measures of success more accurately than does any single test.

By means of statistical techniques each test can be weighted so that the composite scores will yield the maximum correlation with the measures of success on the job. But most ready-made tests include a great deal of material which does not contribute toward predicting these measures of success. Often some of the material may actually function in a negative capacity to counteract the predictive efficiency of desirable material. This is particularly true of the pencil and paper type of test which is composed of a series of objective test items.

Recently a procedure has been employed to determine which specific items in a series aid in predicting measures of success and which do not. A test item predicts success perfectly if all individuals who mark the item in one way receive higher measures of success than those who mark it some other way.

We may consider each separate test item as a single test on which one of two possible scores is made. We can calculate the correlation between the scores on a single test item and the measures of success. This correlation

coefficient is a measure of the accuracy with which a score on that test item will predict success on the job. The method has proved most useful in eliminating from ready-made tests those items which do not contribute toward predicting measures of success.

Even this much improved type of item analysis has certain limitations, however. Suppose that by this technique we find an item which predicts the measures of success with an efficiency of 10 per cent. It may be shown statistically that to get a prediction efficiency of 10 per cent, the scores on the item must correlate .45 with the measures of success on the job. For a single item this is a rather high correlation. Now suppose we have another item which gives about the same predictive efficiency. It does not follow that a combined score on the two items will give a predictive efficiency of 20 per cent, or twice that of either item alone. There may be a high correlation between the two items, indicating that they both predict, to a great extent, the same thing. To the extent that the items are correlated, there is an overlapping or duplication in their predictive value.

Suppose, though, that the correlation between the two items is very low, and that each of them shows a high correlation with the measures of success on the job. Then, if the scores on the two items are combined, the composite score will give a materially higher correlation with these measures of success than if only one of the items were used.

This same logic applies to any number of items. It is merely another way of saying about individual items

what has often been pointed out with reference to a group of tests. In a combination of tests the highest predictive efficiency is obtained if the individual tests correlate highly with the measures of success and low among themselves.

Professor Toops of Ohio State University has pioneered in developing a type of analysis which aids materially in the solution of this problem. By his methods it is possible to select only those items in a series which contribute independently, or with minimum duplication of function, toward predicting measures of success. The general method developed by Toops may be described as follows. Each item in the total series of prospective items is correlated with the measures of success. That item which gives the highest correlation with these measures will be the first selected. Of the remaining items, each is combined separately with the first, and the correlation of each combination with the measures of success is determined. The item which, in combination with the first gives the highest correlation with the measures of success, is the second item selected. Of the items remaining after the first two have been selected, each is combined with the first two, and the correlation with the measures of success is again determined. That item which in combination with the first two gives the highest correlation with the measures of success is the third item selected. The process is continued until the addition of new items fails to raise the correlation with the measures of success on the job.

This procedure is a valuable contribution to the theory and practice of test construction in general, and to the development of efficient personnel selection tests in particular. The method has a practical limitation, however, in that it requires a great deal of time and labor in actual application. It was, therefore, desirable to develop a method which would give essentially the same results and yet reduce materially the amount of work involved.

For this reason we have introduced certain modifications both in theory and in method. This modified procedure will be referred to as "item analysis by the method of successive residuals." We begin in the same way by selecting that item which gives the highest correlation with the measures of success on the job. We can actually calculate how much of each person's measure of success is predicted by his score on the test item. Knowing how much of each individual measure is predicted by the corresponding item score, we can also determine how much of each measure is not predicted by the item score.

Since we wish to predict the highest possible percentage of each person's measure of success, we turn our attention to that part of the measure which is still unpredicted after the selection of the first item. We have a new set of unpredicted residual measures of success after subtracting the part predicted by the first item. We now find which of the remaining items predicts with the highest efficiency the unpredicted residual measures. That item which correlates highest

with the residual measures of success, that is, with the unpredicted part of these measures, is also the item which predicts them with the highest efficiency; and therefore, this item is the second one selected.

In the same way, we can determine how much of the unpredicted parts of the measures of success are predicted by the second item. Consequently, we can calculate a second set of residual measures, smaller than the first, which is predicted by neither the first nor the second item. Next, we find that item of those remaining which gives the highest correlation with the second set of residual measures of success, or with that part of the measures predicted by neither the first nor the second item. This item predicts with the highest efficiency the second set of residual measures, and is the third item selected.

Succeeding items are selected in the same manner. The process is repeated until none of the remaining items predicts any part of the measures of success not already predicted by the previously selected items. Suppose, for example, that we have 100 items from which to make our selection, and that we have selected 15 of these according to the method described. We find that the correlation between each of the remaining 85 items and those parts of the measures of success not predicted by any of the 15 selected items is zero. This means that none of the 85 remaining items will predict any part of the unpredicted residual measures.

The scores on these first 15 items predict the measures of success more accurately than would any other

combination of items selected from the total series of 100 items. But suppose that these 15 selected items were given again to the persons on whom we have the measures of success on the job. How closely will the scores made on these items the second time compare with the scores made the first time? They will, of course, not compare perfectly. The greater this disparity the smaller, in general, will be the predictive efficiency of the scores on the items given the second time. If we cannot be sure that giving the items the second time will yield scores which predict efficiently the known measures of success on the job, neither can we be sure that the scores obtained by giving these items to a new untried group of applicants will predict accurately their future success on the job. For this reason we wish to have a reliable test: one that will yield very nearly the same results when given the second time as when given the first.

It has been proved that, other things being equal, the longer a test the more reliable it is. On this principle we proceed to select a second set of items from those 85 remaining items which failed to predict any part of the measures of success not already predicted by the first 15. This process is exactly the same as the first. This time the limit of our selection may be 12 items, let us say. A third group may be similarly selected, and so on. It should be noted, however, that, in general, the predictive efficiency of each succeeding group of items will be lower than that of the preceding group. Therefore, even though the addition of each successive group of items func-

tions to increase the reliability of the test, a point will be reached finally where this addition will tend to reduce the predictive efficiency of the combined groups of items. It is possible to determine mathematically just where the increase in reliability and the decrease in predictive efficiency counterbalance each other. Beyond this point it is not profitable to go.

The "method of successive residuals" just outlined has been employed in the development of a test for a group of specialized salesmen. The experimental test material given to the men consisted of 405 objective test items. All of these items represented material which had been subjected to a selection process for another group of salesmen, so that the items had already been submitted to a preliminary screening process. However, by the improved selection method only 117 of the items were found useful for predicting the success of this particular group of salesmen. These results are most interesting. They indicate that even for varying types of sales work within a given industrial organization, significantly different types of ability may be required, and, therefore, to get the best results it may be necessary to construct separate tests for the different types of sales work.

To illustrate the value of the "method of successive residuals" in test construction, let us examine in greater detail the results obtained on the group of specialized salesmen. Scores made by the salesmen on the test constructed according to the new technique yield a correlation of .975 with measures of success on the job. Those who are

familiar with the correlations commonly obtained between test scores and measures of success know that it is almost impossible to get correlations of more than .6 or .7, even when the ability to be measured is of a more concrete nature than that required in selling. A correlation of .6 between measures of sales ability and test scores is unusually high. It may be shown that the predictive efficiency of a test which correlates .6 with the measures of success is 20 per cent. This increases rapidly as the correlation is increased. The efficiency of a test which correlates .975 with the measures of success is 78 per cent. A correlation of .975, therefore, gives a predictive efficiency almost four times as great as does a correlation of .6.

This relationship between test scores and success on the job would not be quite as high if the test were given again, due to the fact that the men would not make exactly the same scores the second time as they did the first. We are interested, therefore, in determining how nearly scores on the test given the second time can be expected to correspond to scores made the first time. In other words, how reliable is the test? By the aid of statistical techniques we find that a second set of scores can be expected to correlate with the first set to the extent of .93. In other words, the reliability of the test is .93. This high reliability is, of course, not a mere coincidence; it was obtained by following the procedure described above, that is, by selecting additional groups of items which gave a high correlation with the measures of

success, and then combining all the groups of items into a single test.

In this test the two essential requirements of a good personnel selection test are satisfied. First, the test predicts with a high degree of efficiency the measures of success on the job, and, second, the test is highly reliable, so that the scores which would be made on it if given a second time will correspond closely to the scores made the first time.

A discussion of the mathematical theory and the mechanical operations involved in the "method of successive residuals" has been purposely avoided in this paper since they will be presented elsewhere. It is important to note, however, that the method is purely empirical.

Certain methods recently reported may be more aptly characterized as rational, in the sense that, the job for which the test is to be developed is first analyzed to determine the specific abilities required. Tests are then devised which are thought to measure these abilities. Psychological analysis thus plays a major rôle in this type of test development.

In industrial personnel situations we are concerned with psychological classifications and formulations only insofar as they help us to develop tests which select with greater accuracy those persons who will be most successful on the job. Theoretical analyses are useful in the selection of preliminary test material, but only the quantitative type of analysis can tell us which of this rationally selected material is useful in predicting success on the job. We must know in numerical

terms how efficiently any particular test material or combination of test material predicts measures of success before we are qualified to accept or reject it.

The "method of successive residuals" is the culmination of a number of years of research in the development of scientific personnel selection instruments. This method contributes very

little toward showing us how we can apply standard psychological terminology to personnel problems, nor does it give us useful leads for the development of new terminology. It does, however, help us to select a higher proportion of successful men, as judged by their value to the organization, than does any other method with which we are familiar.

Characteristics of Life Insurance Salesmen¹

By P. S. ACHILLES AND R. S. SCHULTZ, *Psychological Corporation*

A battery of personality and intelligence tests was given to a group of 557 new agents and 62 assistant managers in a large life insurance company. Preliminary analysis of the data shows that the assistant managers scored slightly lower than the new agents in ascendance and extroversion, and higher than the new agents in intelligence. Those with high production records, however, averaged higher than the low production men in ascendance and extroversion. Averages on the intelligence tests for the two groups were about equal. Comparisons of assistant managers and new agents on the Strong Vocational Interest Blank showed the former to belong predominantly in the linguistic and social service groups, and the latter in the commercial and clerical groups.

THE hope upon which research in the selection of salesmen has long been founded is that successful salesmen possess certain characteristics differentiating them from non-salesmen, or from the less successful salesmen of the same product or service. Although such research in the past has yielded rather meager results, hope springs eternal in the psychologist's and the sales manager's breast. Each makes advances contributory to the conduct of better investigations, the former through improvement of tests and techniques, and the latter through improvement of standards or criteria of success. With these improvements and the glimmers of light from previous studies, the quest for differentiating characteristics goes

on. This report presents some of the preliminary findings in another such investigation.

The data here considered are based on a group of 557 new agents and 62 assistant managers, who in small groups over a period of time attended the home office school of a large life insurance company for a period of one week. The selection of tests utilized in the study was guided by previous findings, availability, and practicability, and the opinion that existing standardized tests should be tried out more thoroughly before discarding them or devising new ones.

Previous studies have indicated that if there are any characteristic traits or behavior tendencies favorable to success in life insurance selling, they seem to lie in the direction of what is called *ascendance* (in contrast to *submissiveness*) and *extroversion*.

The Beckman Revision for Business Use of the Allport A-S Reaction

¹ Preliminary report of an investigation being conducted in coöperation with the Metropolitan Life Insurance Company by the Psychological Corporation's Main Office staff.

Study² and the short Root Introversion-Extroversion Test³ were selected for this investigation. These two forms are less subject to the criticism of prying into personal affairs than the Bernreuter Personality Inventory which was purposely avoided, not because of disbelief in its value, but because of doubts as to the possibility

sampling and the Pressey Senior Classification Test on another. In order to get at interests and attitudes, the Strong Vocational Interest Analysis Blank was used and scored for 18 occupations. Since salesmen may find verbal and linguistic abilities an asset, a sampling of this group was given the O'Rourke Vocabulary Test. A

TABLE 1

Average and median test scores of life insurance salesmen

	ASCENDANCE-SUBMISSION TEST (BECKMAN REVISION)			INTROVERSION-EXTROVERSION TEST (ROOT)			MENTAL ALERTNESS TEST (BUREAU VI)		
	N.	Av.	Median	N.	Av.	Median	N.	Av.	Median
New agents	557	4.31	4.25	231	4.61	5.00	296	62.91	61.11
Assistant managers	62	2.12	2.50	20	1.88	2.50	28	73.93	67.50
High production (new agents)	48	5.75	6.50	30	4.25	6.25	42	66.43	65.71
Low production (new agents)	50	2.40	1.33	33	2.88	2.50	41	65.73	61.25
<i>Terminations:</i>									
A—13 weeks production	24	4.96	3.00	21	7.26	7.50	21	60.24	47.00
B—Less than 13 weeks production	40	5.40	3.33	24	1.87	0.00	31	61.45	53.00
C—Did not open	27	-0.59	-3.00	17	2.79	2.50	20	50.60	47.00

of presenting it so as to obtain honest responses in a semi-pre-employment situation.

In previous studies the use of intelligence tests for salesmen has not proved fruitful. The intellectual requirements of salesmen are probably rising, however, and the stiffer their training becomes the more important it seems to obtain quickly some estimate of their capacity to profit from classroom instruction. Accordingly the Bureau Test VI for Mental Alertness was used on one large

specially devised Sales Objections test was also tried.

TRENDS IN PRELIMINARY TABULATION OF RESULTS

Preliminary comparisons have been made of the following groups: the new agents as a whole, the men who have already terminated or left the company, and the 62 Assistant Managers, who represent a group of men of several years' successful service with the company. Table 1 shows some of the trends in these comparisons where there seems hope of establishing reliable statistical differences as our work progresses.

Assistant managers. The results of comparisons with this group are briefly as follows:

² Beckman, R. O. The Ascendancy-Submission Test—Revised, *Personnel Journal*, 1933, 11: 387-392.

³ Root, A. R. A Short Test of Introversion-Extroversion, *Personnel Journal*, 1931, 10: 250-253.

1. Assistant managers score, on the average, eleven points higher than the new agents on the intelligence tests.

2. The assistant managers score, on the average, over two points lower than new agents in "ascendance."

3. The assistant managers score, on the average, over two points lower than the new agents in "extroversion."

This looks contrary to expectations. Intelligence seems a favorable factor and ascendance and extroversion unfavorable, but further comparisons

agents, and 2 points below the assistant managers; but in extroversion the differences are not as clear.

High and low production. Comparing the 50 highest men in production for the first 13 weeks with the 50 lowest, the average of intelligence scores is found to be equal; but the high production men are 3.4 points above in ascendance and 1.4 points above in extroversion. This suggests that high ascendance and extroversion may be characteristics of the "quick

TABLE 2

STRONG OCCUPATIONAL GROUP CLASSIFICATION	PER CENT	
	RATING A	RATING A OR B
IV (Commercial) Vacuum Cleaner Salesmen.....	73	98
IV (Commercial) Office Worker.....	71	98
IIb (Linguistic) Life Insurance Salesmen.....	44	95
IIb (Social Service) Personnel Manager.....	33	92
IV (Commercial) Accountant.....	30	88
IIIb (Social Service) Y. M. C. A. Secretary.....	19	89
IIb (Linguistic) Real Estate Salesmen.....	14	63
I (Scientific) Engineer.....	0	14
I (Scientific) Farmer.....	0	7
I (Scientific) Physician.....	0	3
I (Scientific) Architect.....	0	2

below indicate possible interpretation of these results.

Terminations in school. Up to the time of this report 27 cases had occurred in which men went through the school; that is, they were an expense to the company, but, to use the company's phrase, they "did not open." This means that they terminated before getting on the job. The average intelligence test score of these men is 12 points below the average of new agents, and 23 points below the average of assistant managers. Similarly in ascendance they are more than 4 points below the average of new

starters," but less significant in men good for the long run; or that these characteristics are habit patterns which are modified by experience and become less pronounced, as shown in the patterns for the assistant managers. Only the future history and possible retesting of these men a year or two from now will tell.

Terminations in service. The possibility of difference between "quick starters" and "long pull" men may be observed also by examining the terminations of those who have been in service. The average in ascendance for 64 men who served for 13 weeks or

less is 5.2, about the same as the average for the high production men still with the company. There is a curious difference of about 5 points, however, between the average extroversion score of 21 men who served for at least 13 weeks, and that of 24 men who served for less than 13 weeks. The average intelligence test score for the entire group of 72 terminations is 57 which is 6 points below the average for new agents as a whole, 9 points below the average for 100 men who served longer than 3 months, and 17 points below the average for assistant managers.

Interests. Seventy-three per cent of the new agents were found by use of the Strong Vocational Interest Blank to have interest patterns closely resembling (A rating) those of vacuum cleaner salesmen. On the other hand, only 2 per cent have interests even moderately resembling (B rating) the pattern typical of architects. Other comparisons are given in table 2.

For other occupations the proportion of A ratings is less than 10 per cent. It will be noted at once that the trend is distinctly toward what are called the Commercial, the Linguistic, and the Social Service groups of occupations and away from the Scientific.

Such comparisons of new agents with assistant managers in interest ratings as have been made thus far, show a higher percentage of the assistant managers in the Linguistic and Social Service groups; that is, more A and B ratings for Life Insurance salesmen, Teacher, Minister, Y. M. C. A. Secretary, and Personnel

Manager. The new agents are predominantly in the Commercial and Clerical groups.

There is evidence of the same trend in that the high production men of the first 13 weeks also show a greater proportion of A's and B's in the Linguistic and Social Service groups than do the low production men. Among men who have already terminated there seems to be less definition of interests or more variability in ratings than in any other of our groups.

CONCLUSIONS

Obviously there is plenty of work ahead in establishing satisfactorily the differences revealed by these early trends for the various tests. The most promising immediate prospect is that of so defining the characteristics of the men who "do not open," or terminate within a few weeks, that the company can be saved the expense of training them. Such investigations as this also raise the question as to whether the next step in research in selection of salesmen may not consist of related studies of the characteristics of various groups of customers in order that salesmen most suited to dealing with special classes of customers, or prospects, may be selected, instead of assuming that a single basis of selection will discover men suitable for all classes. This question is inevitable in view of the biosocial nature of personality traits.⁴

⁴ Vernon, P. E. The Biosocial Nature of the Personality Trait. *Psychological Review*, 1933, vol. 40, no. 6.

"Labor Extension" in a Cotton Mill¹

BY R. C. NYMAN, *Institute of Human Relations, Yale University*

FEW questions have recently received more widespread attention than the distribution aspects of technological progress. Yet the human problems of technological change extend far beyond the problem of how to alter our economic order so that increased productive power will serve to raise the general standard of living, instead of dissipating itself in painful spasms of unemployment.

Fear of unemployment, however, is by no means the only reason why workers dread technological changes. Few major technological changes have taken place without disturbing—and in most cases violently disrupting—the ways and lives of the workers concerned. Likewise few major technological changes have occurred which have not created difficult problems of labor management. At no other time is the protection of worker well-being, prestige, and earning power so dependent upon skilled and right-minded management as in a period of technological development. At no other time, perhaps, is management more dependent upon worker coöperation. Yet these human problems of technological progress have all but escaped public attention or scientific study.

The extent of technical advance in recent years, however, has made it important that the same scientific attitude and method which have brought about technological progress be applied to these human problems to which this progress has given rise.

THE YALE INSTITUTE OF HUMAN RELATIONS STUDY²

In the Institute of Human Relations at Yale we have tried to make a start in studying these problems. The purpose of our investigation is to unite experts in the social sciences with experts in engineering and management in an integrated study of the problems at their source where effective preventive action can be taken. Because economic, sociological, physiological, and psychological as well as engineering problems are involved, they must be subjected to integrated rather than specialized study. Since they relate primarily to the influence upon the individual workers and executives of the complex factors involved in concrete instances of technological change, these problems must be studied by direct observation of actual instances at the individual factory. Only to a

¹ Announcement of a descriptive case study of the human problems of technological development as indicated by the introduction of the "Stretch Out" System at the Pequot Mills.

² This is a summary of portions of a preliminary, unpublished report on "Technological Progress and Labor," by Elliott Dunlap Smith, Professor of Industrial Relations, Sheffield Scientific School, Yale University.

very limited extent can they be subjected to the statistical methods of inquiry customarily employed in the analysis of the impersonal forces and units of supply and demand.

In studying these human problems of technological progress, our procedure and method so far have been as follows.

To secure comparability and to eliminate variables we have confined our initial investigation to one narrowly defined technological change in one industry. A group of instances of the technological change that represented a wide and typical range of conditions, methods, and results was selected for intensive investigation. Then a thorough study of the entire problem of the technological change, not merely nor even primarily of the problem of labor and its management, was made at each mill selected by men of managerial experience. By this means we sought to identify the influence of all factors affecting the human problems involved, even though these factors lay in apparently extraneous fields. Records were obtained, conditions observed, and executives, engineers, and workers were interviewed in fourteen mills. Where possible, labor organizations were visited and labor leaders questioned. Field study was systematized and guided by schedules and questionnaires prepared in consultation with our cooperating social and engineering scientists.

The material thus obtained at each mill was brought together in comprehensive case study reports. To render comparable the material obtained, since the several instances varied in

date and length of time though they were alike in the confusing interplay of forces revealed, the description of the development in each case was divided into four stages, the preliminary, the preparatory, the installation, and the stabilization stages. We also subdivided each case into six major functions, financial, merchandising, technical, managerial, labor, and social. This we found made it possible to view the several stages in each case as uniform phases of a common sequence and the several functions as uniform aspects of the change as a whole.

Preliminary analysis so far has consisted of comparative case study, the development of common, objective measures, and the preparation of schematic charts of material from all of the mills with common phases and functions in juxtaposition. The arrangement of the material of each case in a common structure of stages and functions, however, facilitated both charting and comparative case study; for even in reading the report of a single case the relative character of the conditions, measures, and results are inevitably seen in terms of the common structure of the other cases. This arrangement of the material has made it easy to follow through at any time the situation in regard to any particular aspect in all of the mills. Both in chart and comparative case study, the several cooperating social and engineering experts have contributed valuable suggestions and criticisms as to the material and our method of analysis. While charting has proved valuable in indicating com-

mon measures, factors, and events, our most fruitful preliminary results have come from comparative case study.

THE TECHNOLOGICAL DEVELOPMENT

We chose for a beginning to study the so called "multiple loom," "extended labor," or "stretch out" system, more properly described as the introduction of improved methods of using the automatic loom, in the cotton manufacturing industry.

This technological development had many favorable characteristics for comparative study. It had been widely introduced. It was still in process. It had been conducted by a diversity of methods and had resulted in a diversity of human and manufacturing consequences, bad and good. It had greatly increased the machine assignments of the individual weavers and brought about major changes in their working conditions. The situations in the cotton manufacturing industry, providing similar technological conditions with contrasts in management, in working and living conditions, in the character of labor employed, in provisions for worker-management relations, and in the size and geographical location of the individual plants, seemed such as to bring out rather sharply the human factors of the technological change.

The "extended labor" or "stretch out" system is essentially a process of introducing labor saving methods, not labor saving machinery. In principle adapted to cotton mill processes generally, the "stretch out" system grew out of belated efforts to increase worker efficiency in automatic weaving. Though not introduced until 1923, the

application of this method of reducing labor costs to the weaving process was made possible by the invention of the automatic loom in 1894, nearly thirty years earlier. Its late introduction seemingly was due to a lack of development of systematic operating and working methods in cotton manufacturing until recent years.

The common power loom more than a century before had changed weaving from a handicraft to a mechanical process and the weaver from a hand worker to a machine operator. A considerable amount of hand and eye work, however, continued to be required of the weaver who still had to remain constantly at his looms to watch the weaving of the cloth, to maintain a continuous supply of weft yarn, and to stop the loom by hand when a strand of yarn broke or mechanical trouble developed. Though the common power loom was gradually improved to an extent permitting a weaver to attend more than one machine, the number of looms which could be operated by a single weaver was limited to six or eight at the most.

The invention and perfection of the automatic loom, however, relieved the weaver of the necessity of remaining constantly at his looms. Automatic devices took the place of the eyes and hands of the weaver. The improved design and structure of the loom also permitted more rapid operation and more accurate cloth construction. Moreover, since the strength and uniformity of the yarn and such weave room conditions as humidification were simultaneously improved to assist in the reduction of loom stoppage, it was possible greatly to increase the number

of looms per weaver. By 1923, just before the "stretch out" system was first introduced, individual weavers were already operating from 12 to as many as 35 automatic looms.

Until the introduction of the "stretch out" system, however, weavers continued to work in much the same manner and to perform the same duties in automatic as in common power loom weaving. They still worked in front of their looms to inspect the weaving of the cloth. They continued to spend a large part of their time replenishing the supply of weft yarn but did this by placing full bobbins in a bobbin "battery" instead of inserting a new bobbin directly into the shuttle. In addition they were still required to "piece up" and "tie in" broken strands of yarn, to make the incidental mechanical adjustments required for the operation of the loom, to oil and clean their machines, and to remove the finished cuts of cloth. As formerly it was a part of their duties to "pick out" small defects in the cloth and to repair "smashes," damage to the warp yarn caused by imperfect shuttle operation, though in these tasks they were frequently assisted by "pick out" or "smash hands." In some mills it remained necessary for them to help the loom fixers to rig the looms with new warps and to prepare them for operation. In other words, except for the changes just noted, automatic weavers carried on essentially the same work as had been required of common power loom weavers for over a hundred years.

Aside from this, the weavers ordinarily failed to follow any very systematic procedure in patrolling their looms, or any standardized working

methods. This inevitably resulted in a waste of time and a loss of production. Since the weavers were piece workers, paid by the cut, loss of time and production held their earnings below what they might have received had full advantage been taken of the automatic features of the new loom. Also, because proper loom assignments were not scientifically determined, because fatigue allowances were not ordinarily provided, because mechanical operating efficiency frequently varied widely, and other weave room conditions were often far from standardized, even in automatic weaving, the weaver was not necessarily free from overwork or an excessive job burden.

As originally developed the "stretch out" system was designed to take full advantage of the opportunity provided by the automatic looms both to increase the efficiency of the weavers and to improve their working conditions. Under the "stretch out" system, as first applied and where later scientifically introduced, the weaving job was subdivided, systematic working methods were established, and reasonable job burdens and loom assignments carefully determined by end breakage tests, loom stoppage tests, time studies, and job analyses. The weavers were required only to inspect the cloth, to detect and correct defects in the warp yarn, to make the mechanical adjustments incidental to loop operation, to "piece up" ends, and to pick out only the smaller defects in the fabric. The weavers were thus relieved of all routine unskilled tasks, or skilled work which could not be done without interfering with systematic loom patrolling.

The unskilled tasks were assigned to unskilled, supplementary workers. Loomfixers or "change hands" were assigned the skilled task of preparing the looms for operation. Systematic loom patrols were laid out for the weavers and all the workers were taught standard working methods. Weavers' job and loom assignments were based largely upon the frequency of loom stoppage. Also, regardless of the number of looms assigned, they were not required to attend to more than a [systematically] predetermined number of loom stops representing a fair job burden.

Because the number of looms a weaver could operate was thus largely conditioned by loom stoppage frequency, the mechanical condition of the looms, the strength and uniformity of the yarn, and weave room conditions generally were brought to and carefully maintained at a much higher standard than formerly. Fatigue allowances or rest periods were provided to avoid over-burdening the workers and to compensate them for the more thorough attention, and, in the case of the weavers and "battery hands,"³ the greater amount of walking required. Finally, systematic maintenance and supervisory systems and methods were worked out and the operating executives were educated to follow these, in order to assure proper operating and working conditions. Aside from certain unavoidable demotions and displacements, the introduction of the "stretch out" system as originally devised seemed to involve few adverse

human consequences. It did not necessarily result in any "stretching out" or overburdening of the workers, the term "stretch out" being applied later when less scientific attempts were made to increase the number of looms per weaver without the mechanical or methodological improvements, subdivision of labor, or careful determination of reasonable job burdens, fundamental to the introduction of the system.

The development thus represented "the scientific integration of all of the functions of the mill to the needs of the looms and the weavers, and the functionalization of the weaving operation."⁴

The improvement in the technique of automatic weaving brought about by the "stretch out" system as originally conceived made it possible to assign from 20 to as many as 100 looms to a weaver, and to use a much larger proportion of unskilled workers in the weave room. Weaving and labor costs were reduced both by the improvement of mechanical and worker efficiency and productiveness, and by the savings made through the use of less skilled and hence lower paid workers. While the elimination of some few workers increased the savings thus gained, the number of workers released and the economy derived by this means were relatively insignificant.

LABOR EXTENSION AT THE PEQUOT MILLS⁵

A brief description of a specific case will serve to illustrate the conditions

³ An unskilled worker added to maintain the supply of weft yarn by filling the loom "batteries" with full bobbins.

⁴ Prof. Elliott Dunlap Smith.

⁵ Because the case of the Pequot Mills seems of much present significance, with the

and the nature of the human problems we have found to be involved in the introduction of the "stretch out" system.

The case of the Pequot Mills, though exceptional in many respects, is representative of those we have thus far studied. It is of especial interest because of the wide range of management, engineering, and labor relations developments which accompanied the introduction of the "stretch out" system.

At the Pequot Mills the management, in 1928, proposed to introduce the "extended labor" or "stretch out" system as an emergency cost reduction measure. The "stretch out" system was adopted because, while plant and equipment were highly efficient, existing operating and working methods were resulting in an inefficient use of labor. This, coupled with inability to meet increasingly destructive competition, had already resulted in operating losses.

Working conditions at the Pequot Mills were exceptionally good and wages had long been much above the level of the industry. The mill officials were singularly sincere and sympathetic in their attitude toward labor problems. The workers were represented by a fully recognized and long

permission of the officials of the Company, a separate report of this instance of the introduction of the "stretch out" system is to be published during the winter in advance of our general report. The Pequot Mills, operated by the Naumkeag Steam Cotton Company, are located in Salem, Mass., and are among the oldest and largest establishments in the cotton goods manufacturing industry. They produce fine quality sheets and pillow cases exclusively.

established trade union. Despite these conditions, fear of unemployment, demotion, and excessive job burdens, led the workers to oppose the introduction of the "stretch out" system, even though wage increases had been promised the workers to be "extended." Not until the management consented to base increased job assignments upon joint factual analysis rather than upon executive judgment as to what constituted a fair job burden would the workers agree to the development. Even then their consent was obtained only with the understanding that eliminations would be confined to temporary workers as far as possible, that demotions would be based strictly upon seniority, and that no new job assignments or wage rates would become effective until approved by the trade union.

As a result the trade union not only fully participated in and to some extent controlled the development, but also brought about the employment of an industrial engineer and the establishment of a joint research organization to supervise it. Although this arrangement afforded the workers full representation at every stage of the development, was designed to insure fairness both to them and the company, and involved a slow and careful, if complicated, procedure, both worker and operating executive resistance was encountered throughout the change. Although mechanical efficiency was already high and working conditions good, three years had to be spent in the standardization of operating conditions and in the development of new working methods. When the introduction of the "stretch out" system,

was eventually completed in all of the departments of the mill, substantially reducing labor costs and increasing the wages of the workers "extended," the results were not entirely satisfactory either to the management or the workers.

The results were unsatisfactory to the management, because, despite the reduction in labor costs, the company, largely due to the depression, made unsatisfactory progress in meeting competition and remained unable to avoid operating losses. Furthermore, the officials of the company were of the opinion that the degree of extension achieved was not as large as it might have been. The operating executives, too, were inclined to believe that the new methods introduced represented but little improvement over those formerly in use, and resented union encroachment upon operating management. The workers on their part were dissatisfied because 350 of their number, including some permanent workers, had been eliminated, because as many more had been demoted at reduced wages, and because they soon came to believe that the new job assignments had created excessive job burdens.

The worker dissatisfaction and resentment thus created was intensified when, during 1931 and 1932, curtailment of operation and two wage reductions due to the depression brought their earnings below those received prior to the acceptance of increased machine and job assignments. Though wage rates and earnings continued to be much above the level of the industry as a whole, the "stretch out" system consequently came to be

regarded with increasing hostility and the trade union officials with animosity because they had agreed to its introduction and the wage reductions which followed it. Because of this attitude and because the development was largely completed, the industrial engineer in charge was released and the joint research organization disbanded. "Joint research" and "stretch outs" had apparently become things of the past.

The increasingly adverse effects of the depression and continued pressure for cost reduction, however, led the mill officials early in 1933 reluctantly to propose a resumption of joint research and further "stretch outs" at the mill, and the introduction of the system at the bleachery also operated by the company. Meanwhile the workers had come to leave their affairs very largely in the hands of the trade union officials, and hence hardly participated in the negotiations relating to this development. When the union officials agreed to this proposal, the workers rose in rebellion. The "extension" of a few jobs at the bleachery, following studies by a skeleton joint research staff minus the engineer, and continued insistence both by the company and trade union officials that further "stretch outs" were justified at the mill and should be accepted, precipitated a strike. In defiance both of the company and the officials of the union the workers remained away from their jobs for ten weeks. Fortified by a provision included in the Cotton Textile Code, adopted under the National Recovery Act during the strike, to control further introductions of the "stretch out" system which might

result in unemployment or labor exploitation, the workers refused to return to the plant until the mill officials agreed to postpone additional "stretch out" research for a period of two years.

Since the union officials had refused to sanction the strike, regarding it as a violation of contract, the workers, within a week after it was settled, resigned in a body and formed an independent organization, confident that any union they formed would of necessity be recognized by the company, because of the collective bargaining provisions of the National Recovery Act.

This left the mill officials to deal with three antagonistic labor organizations—the new independent union, the remnant of the old union, and a small but well-knit loomfixers' union, which had been in existence for many years, and which had refused consistently to participate in the technological development. It also left the company unable to conduct any research tending to increase job assignments or change working methods for a period of two years, regardless of a continued need for cost reduction. Although the strike cost the workers some \$200,000 in lost wages, they apparently considered it worth the cost to prevent further "stretch outs," if but temporarily. It would seem, however, that with the dissolution of the old union and with the new independent organization in charge of inexperienced leaders, enjoying few of the advantages of the old union, the workers scarcely improved their position.

In this instance, economic necessity led the management to undertake a

technological change considered by the workers as detrimental to their interests. When, however, they were given an opportunity to protect themselves through participation, the workers consented to the change and permitted it to be carried out. Because the results were not without their adverse effects, the workers subsequently came to resent the change. Adverse social and economic forces arose to intensify these unfavorable results and to threaten their security, causing the technological change to become a symbol of oppression and exploitation to the workers. As a result of this enmeshing of adverse social, economic, and labor forces, the proposal of new changes stimulated them to rebel. Since the provisions for communication between the management and the workers for joint discussion of mutual problems had ceased to reach below the union officials, the employee body as a whole was neither fully aware of nor understood the reasons for the new changes. These appeared unreasonable to them and created in their minds a conviction that only by preventing further "stretch outs," could they preserve their security and well-being. Regardless of the loss of wages and the risk involved, they acted to prevent the proposed new changes, and temporarily succeeded in doing so. Since their formerly strong organization, which had been granted a coöperative status, was dissolved in the process, and since the management was left to face difficult economic adjustments and to cope with many new and intense problems of human relations, the outcome was costly both to the workers and the company. Thus a

sound technological development, in the introduction of which unusual provisions had been made to protect the workers, first succeeded and then led to a disastrous strike, due to failure to maintain the community of understanding, so essentially the basis of its original success.

The complicated conditions, problems and results of "stretch out" system at the Pequot Mills, though different in many respects, are characteristic of those which accompanied its use in several of the other mills we have studied. While space does not permit an adequate description of the case⁶ nor any explanation of the confusing interplay of forces involved, the foregoing summary is illustrative of the situations with which our study has to deal. Since our investigation is as yet incomplete, no general conclusions can

⁶ The report of the Pequot Mills' case, which we expect to publish during the winter, is a factual history both of the technological change and the developments bringing about the conditions under which it occurred. Though purely descriptive, the report reveals both the reasons for the complicated introductory situation and how and to what extent management, engineering, and labor problems were interrelated.

be presented at the present time. As indicated by this and other cases, however, it appears that such factors as proper timing and scheduling, a scientific attitude, a systematic and comprehensive approach to the human as well as the technical aspects, the establishment of means for assuring understanding, and the provision for the protection of worker interests sufficient to meet the risks and fears of unemployment and exploitation are especially important in the management of a technological change, if adverse human and social consequences are to be avoided.

The above case is merely illustrative of the several individual instances of the technological change which we have so far investigated. Our study, aside from the development of a method of investigation providing comparable results in the study of other and different technological changes, looks to a comparison of these cases, of which the Pequot is but one, for conclusions which will indicate how similar technological changes may be managed in such a way as to avoid unfavorable human and social consequences.

Commercial and Professional Placement

Procedures in a Public Employment Office

By CHARLES H. HOWARD, *Public Employment Center of Rochester*

A SENSITIVE woman of culture and refinement called at the office recently to request our aid in securing a position. For years she had been associated with public-spirited enterprises. As her husband was unemployed, she was forced to do something to keep her children in school. Like thousands of other people she had never been forced to seek employment before. She was dubious about going to an employment office, but a friend insisted that she come to us for counsel. After the receptionist had greeted her cordially and explained how the application card was to be filled in, she was introduced to the placement officer. Within a few minutes rapport was established, and one of the first remarks she made was, "Your receptionist made me feel at home as soon as I entered the outer office; she created the atmosphere which I shall associate with your organization."

This woman's experience is typical of that of hundreds of men and women who come to our offices. A tactful and resourceful receptionist is in many respects an indispensable part of the personnel of a public employment office. Consider the importance of her functions, which include making initial contacts with all persons entering the

office, giving these persons such information about the office and its policies as the occasion may demand, instructing applicants how to make out their application cards, supervising the flow of applicants through the interviewing offices, adjusting minor difficulties and complaints, relief interviewing and placement work, and stenographic and clerical duties.

THE INTERVIEW

Before the applicant is directed to him, the placement officer is given the application card with significant data as to age, education, marital status, nationality, etc., together with the employment record. This information usually enables him to establish rapport with the applicant almost immediately and, at the same time, eliminates the necessity of asking routine questions, thereby expediting the interview.

The next question that naturally arises is: What kind of interview is calculated to serve best the interests of the applicant and the employer? Since employer demand is so largely in terms of specific job experience, we have emphasized the analysis of the applicant's job history as one of the most important phases of the interview. A brief duty analysis is made of the positions that have been held by

the applicant. For example, Mr. X had been assistant advertising manager of a local company during the past ten years. In filling in the application card, he had recorded in the space for duties and responsibilities merely the title of his job. It had not occurred to him that if we were to serve him intelligently, we should have to know what his duties and responsibilities had been. The duty analysis revealed this additional information which was recorded on the application card by the placement officer.

We have not attempted to standardize the interview, but to organize it with a view to obtaining as complete information about the applicant as is practicable. How long, for instance, should an interview last? We found that such variable factors as the alertness of the applicant, the extent and complexity of his experience and training record, and the time required for him to adjust himself to the occasion must be considered by the placement officer in determining the length of each interview. Confirming Bingham and Moore, our experience indicates that some of the most significant data about applicants is obtained from the free expression of their interests and ambitions. Such confidences can be inspired only after a feeling of mutual confidence and respect has been attained. Whether the placement officer is dealing with the recent college graduate who has ambitions to become a newspaper editor, or the mature accountant who likes his work and whose hobby is collecting Americana, the free expression of the applicant's ambitions, interests, and attitudes toward jobs, throws significant light

on his character and mental outlook. Unfortunately, it is not always possible to give interviews of optimum length during periods of peak interviewing load; but, since frequent reinterviews are the rule, additional information is obtained from time to time and recorded on the card.

The placement officer must appraise, also, initiative, habits, attitudes, mannerisms, and appearance, all of which are important factors in the placement of commercial and professional workers. We recognize, of course, that it is not possible to assess and record these traits on a scientific basis. Granted, however, that they cannot be measured objectively and that errors in judgment are made, such appraisals are one of the most useful tools that the placement officer has at his command. In this connection, the specificity of traits is emphasized, so that from observations made, conclusions will not be drawn about other characteristics of applicants. For example, the fact that a man is careless about his appearance does not necessarily indicate that his work would be careless.

The placement officer's comments are recorded on the application card immediately after the interview is terminated, for their value diminishes rapidly with the lapse of time between the interview and the recording. In order that as many pitfalls as possible may be avoided, the data recorded are confined to three categories: observed facts, statements made by the applicant, and inferences from these observed facts and statements. The applicant's assets and liabilities are noted on the card under the following

headings: physical, health, mental, volitional, occupational, social and emotional. Frequently these comments are revised after subsequent interviews.

VOCATIONAL INFORMATION

A second important phase of interviewing in public employment offices is giving job and vocational information to applicants. Our experience with commercial and professional workers indicates that such information usually falls into three classes:

1. Opportunities for employment in local and regional business and professional organizations, and concrete suggestions as to how the applicant himself may organize his job-hunting activities.
2. Opportunities for employment in various vocations and professions.
3. Training facilities for various vocations and professions.

If there is no opening to which applicants may be referred at the time of the interview, they may ask the placement officer about job possibilities in local business and professional organizations. Not infrequently the placement officer helps them plan job-hunting campaigns and suggests leads that they may follow. In fact, helping the applicant to help himself is one of the constructive services that the public employment office should render to the community. Such service is not restricted to the field of employment, for it includes assistance in matters of social adjustment and morale, so important in times like these.

Then there is the case of the appli-

cant who has an unusual experience background, offering an opportunity for the placement officer to render a special service to both applicant and prospective employer. Consider, for instance, a few of the people who registered with us in recent weeks: a filing-system specialist, a man experienced in both accounting and credit work, a high-grade millinery saleswoman, a stenographer skilled in taking technical dictation, and a psychiatric social worker. The well-informed placement officer knows of employers who may be interested in people of this type. In the above cases the placement officer telephoned to firms and institutions that would be likely to use their services, and interviews were arranged before the applicant left the office. Four out of five of these interviews resulted in placements.

Field visitations, employers' orders, census reports, organization meetings, such as those of the Chamber of Commerce, Vocational Guidance Association, etc., telephone calls, and letters of inquiry, all contribute toward the accumulation of the placement officer's general fund of occupational information. Newspaper articles announcing policies and personnel of local firms are carefully noted. In addition, interviews with thousands of men and women applicants, who have worked in almost every kind of business and professional organization in the locality, familiarize him with many kinds of jobs in the community.

Another field of information in which the placement officer is called upon to assist applicants involves the question of work possibilities in various occupations and professions. In our

present state of knowledge of occupational and industrial trends, only approximate and tentative data are available. If specific information is sought regarding a vocation with which the interviewer is not in close touch, the applicant is frequently referred to a specialist in that field; for example, opportunities in library work, journalism, or commercial art. In addition to such information as he may have concerning conditions in vocational groups, the placement officer is asked to suggest the names of articles and books dealing with the vocational fields in which the applicant is interested. Judgment and wide acquaintance with reading material are requisites for selecting such inspirational and scientific material as may be best suited to the background and temperament of the questioner. The problem of acquainting the placement officer with the literature dealing with vocations and occupational trends may well be included in the public employment office training program. In this connection, local public employment executives may perform a service to their staff and to the community by suggesting the establishment of a special section devoted to vocational literature in local libraries.

Applicants who have decided upon a particular field for which to train, request information relative to training facilities adapted to their particular needs and financial condition. Questions regarding schools and colleges for specialized work along the lines in which they are interested, scholarships, allowances to students, opportunities for part-time jobs and living arrangements, are common. In

such cases, if we do not have the information, we may make special inquiries, correspond with persons or institutions, or refer the applicant to persons who we know have the desired information.

LETTER CAMPAIGNS

In the course of interviewing we found that a number of applicants asked for advice and help in formulating letter campaigns to sell their services. In other instances, we felt that some of our outstanding people possessed abilities and qualifications that could be used by some employer if they had the opportunity to present them. Not knowing of any particular firms that were in the market for these persons at the time, we suggested letter campaigns as a means of making contacts with a large number of organizations that might use their services. Even if no opening was brought to light through the letters, the replies would furnish a list of firms that would be good prospects for future follow-up.

Consider the case of Mr. Y, a man in his late forties. He had been the comptroller of a local company that was eliminated as a result of a merger. His family responsibilities were pressing, and he was afraid his age would bar him from most jobs. An exhaustive interview revealed the fact that in addition to his accounting knowledge and experience he had an unusual aptitude for dealing with people. At the placement officer's suggestion he undertook a letter campaign to sell this unusual combination of abilities. Among the replies was one from a director of a mortgage finance company, who was looking for a man to

take charge of the company's accounting work and manage the office. Tact, maturity of judgment, and the ability to command the confidence of the company's clients are essential requirements for this work. Mr. Y got the job.

We found that we could give assistance in helping applicants plan and execute their campaigns: (1) by suggesting sources from which mailing lists could be compiled; and (2) by helping them draft their letters.

No matter what their experience had been, we soon discovered that few persons know how to use the letter of application as an effective medium for selling their services. Usually their first idea is to ask the prospective employer what he has to offer them, rather than to emphasize the capacities and abilities they wish to sell. The procedure is somewhat as follows. First the psychological approach best adapted to the applicant's particular situation is decided upon. The points to be emphasized and the principles to be used in drafting the letter are discussed. The applicant is then asked to make at least three separate drafts of the letter over a period of several days before bringing copy for constructive criticism. This process may be repeated two or three times. When the final draft is finished, the kind of paper to be used and the format of the letter are decided upon. In most cases the applicant either types the letters himself or knows of some one who will do the typing at low cost. When replies begin to accumulate, they are brought in and discussed to determine the best method of follow-up.

OCCUPATIONAL CLASSIFICATION

One cannot but be impressed by the great wealth of training and experience represented by the thousands of applicants that have been interviewed and registered for work in public employment offices. Yet all the time and effort involved in this arduous task are wasted if the placement officer does not have at his command some system of filing and indexing application cards by which these skills may be identified quickly when needed. Let us consider a typical situation that arises in the course of the day's work. An employer telephoned to find out whether we had registered any accountants with standard cost experience. We were asked to call back in five minutes to inform him whether we could supply a man who fitted the specifications. Within that time we were able to locate among the 1000 applications of men in the active files of the Commercial and Professional Division, the applications of all those who had had standard cost experience and pick out two prospects that met the employer's specifications. One of these men got the job. But if we had not had a filing and signaling system that facilitated easy identification of skills, we probably would have lost that employer's order; and the time necessary to interview and register the applicant who got the job would have been wasted.

What system of filing and indexing is best adapted to the needs of the employment office? While we are not prepared to answer this question, we have developed a system that works efficiently. It is based upon an extensively subdivided occupational classifi-

cation, visible files, and a device for signaling occupations. The occupational classification used by the Commercial and Professional Division consists of 372 subdivisions divided into ten large groups as follows:

1. Accountants, bookkeepers, and auditors: thirty-one classifications.
2. Advertising and journalism: twenty-six classifications.
3. Office clerks and office machine operators: forty-four classifications.
4. Industrial clerks: thirty-eight classifications.
5. Stenographers, typists, dictating machine operators, and stenotypists: thirty-one classifications.
6. Retail specialists and sales clerks: forty-four classifications.
7. Salesmen and saleswomen: forty-four classifications.
8. Banking and brokerage: thirty-eight classifications.
9. Miscellaneous executives and managers: forty-four classifications.
10. Miscellaneous professional workers: thirty-two classifications.

It should be noted that technicians such as engineers, chemists, etc., are not included in the classification, as they are handled in another division.

This occupational classification was constructed from data gathered from interviews with applicants, employers' orders, field visits, the Alphabetical Index of Occupations used by the Census, and other sources. We found that practical considerations of employer demand, which is largely in terms of specific job experience, require a classification permitting the coding of all types of jobs that are common to the community. The actual job experience of applicants must be listed and signaled on the application card to fa-

cilitate placement work. It was necessary to provide a miscellaneous classification in each of the ten groups for applicants who, while they have not had experience in any of the classifications listed, have had some experience in one or more of the ten general fields. Also, classifications had to be provided for beginners and learners in each group.

The placement officer classifies each application as follows: (1) for work in occupations in which the applicant has had experience; (2) for work for which the applicant has expressed a desire to register, in many cases the same as (1); and (3) for other kinds of work which the placement officer believes the applicant is capable of doing. Most applications require from three to six occupational classifications.

The application form used by the Commercial and Professional Division is a double card five by eight inches, adapted for visible filing equipment. At the top of the card there are forty-four numbered spaces for occupational signaling. Each of the ten large occupational groups is represented by a distinctive color signal, and the position of that signal on the top of the card indicates the occupation subdivision. For instance, a pink signal on space three indicates that the applicant is registered for cost accounting, while a red signal on position three shows that the applicant is an experienced dictating machine operator. Colored crayons are used for signaling.

As cross indexing for different occupations is not necessary, the application cards are filed alphabetically by name. The file of active applications is, in effect, a perpetual inventory, both

of the names of the applicants and of the occupational skills they represent—an invaluable asset for placement work. Thus, whether the placement officer is looking for the card of some particular person or for some skill or combination of skills, it requires but a few minutes to scan several thousand cards and pick out those wanted.

There may be the objection that such an occupational classification is too elaborate and cumbersome. This objection may have some validity in periods of extremely low labor demand and heavy registrations, but its usefulness is becoming more apparent as the volume of placements increases. In view of the fact that labor demand is so largely for persons with specialized skills and specific experience, a comprehensive occupational classification, with extensive subdivisions adjusted to the requirements of each community, is one of the indispensable tools for efficient placement service.

TESTING

Even after a comprehensive interview and adequate occupational classification of the application card, more objective measures of applicants' abilities are necessary, especially in the matter of skills which cannot be determined with any precision by an interview. For example, with almost 500 stenographers and typists on the active list, our placement officers find it necessary in numerous instances to give tests to determine applicants' speed and accuracy in dictation and typing before referring them to employers for interviews. This is true especially of those persons who have been out of work for some time.

Without the assistance of a special testing division, it is manifestly impossible to test a large number of applicants. For this reason we confine our tests to those who are being considered for referral to jobs that require unusual mental ability, specific skills in stenography, typing and clerical work, or competence in closely related fields, or combinations of these requirements.

In order to save time in giving stenographic tests, the person administering the test dictates at the maximum speed that the writer can take. We tried dictating several pieces of copy at different constant rates of speed, but found that this method requires too much time and is not necessary from the point of view of ordinary business usage. While the rate of dictation and the speed and accuracy of the transcription are all considered in interpreting test results, the latter two are given the most weight in determining an applicant's qualifications for a given job.

In most offices stenographers and typists are required to perform other duties than transcribing notes and typing copy; therefore, it is necessary for the placement officer to appraise the applicant's adaptability for related fields of work. Good judgment and the ability to use correct English are qualifications mentioned frequently by employers in placing orders for stenographers. In this connection, we find that tests constructed from material that is relevant to problems with which stenographers must deal, such as judgment items, analogies and proverbs, substitution, context, reading, spelling and grammar, are useful. Results in these tests are, of course, largely influ-

enced by academic achievement, which is an important factor in predicting success in this field of work.

Next to experience, the qualifications most commonly mentioned by employers when placing orders for higher grades of clerical workers, such as accountants and specialists in the field of planning and scheduling, are, perhaps, best described by the terms general intelligence or mental alertness. In this connection, we find that the mental alertness test (Bureau Test VI, Form B) is one of the most useful tools that the placement officer has at his command. It is interesting to note that we have been called upon to fill comparatively few of the more routine clerical jobs, such as those of file clerk, posting clerk, extension and computing clerk. For this reason we have not had occasion to make extensive use of clerical aptitude tests.

We are experimenting with tests designed to measure personality traits; but because of the low reliability of most of these measures and the lack of any demonstrated relation between test scores and job success, none of

them have proved to be of much practicable value in selection and placement work.

Although the relationship between interest and ability remains a controversial subject, the worker's satisfaction on the job is largely dependent upon whether he likes the tasks he is called upon to perform. From this point of view, interest analysis is an important factor in selection and placement work. In this connection we are using interest inventories, though we find that for several reasons they have little practical value. The burden of clerical work involved in scoring and the small number of occupations below the professional level for which scoring keys are available, are factors that preclude extensive use of these tests in public employment service. Perhaps the most serious defect of interest inventories, however, from the point of view of public employment office usage, is that "interest in a single occupation cannot be distinguished from that in any other with a degree of accuracy valuable for practical purposes."

Development of Standards in the Public Employment Service

BY WILLIAM H. STEAD, *United States Employment Service*

AT THE present time a number of factors in our economic situation seem to indicate the necessity for some type of effective Public Employment service. The pressure of the unemployment situation has aroused public interest in the problem of unemployment reserves or insurance. The experience of those countries which have had to deal with the administration of such insurance systems points uniformly to the necessity of a well organized public employment service as the machinery through which the insurance plan operates. Thus, with unemployment insurance programs in immediate prospect in this country, the creation of an adequate employment service becomes a necessity.

Secondly, the organization of the labor market which is implied in those phases of the recovery program relating to wage standards and the re-employment of properly qualified persons, involves the classification of work opportunities and the provision of agencies to bring together the worker and the job. No adequate machinery has been available for these purposes in the past.

In addition to these immediate situations which give rise to a demand for a public employment service,

there are certain needs which are always present and which can be met effectively only by such an employment service. Stated in the form of objectives, these are:

1. To assist employers to secure suitable employees, and persons seeking work to secure suitable employment.
2. To assist in bringing about and maintaining a balance between the demand for and the supply of employees in the various occupations, and
3. To serve as an authoritative source of information on employment.

In order to carry out these objectives on a national scale, our system of government requires that a proper division of functions should be made between the state and federal governments. Under the provisions of the Wagner-Peyser Act, the machinery for such a coöperative Federal-State program is being developed by the United States Employment Service.

The development of the National Reemployment Service as a part of the United States Employment Service was described last evening by Mr. Persons.

In addition to supervision of Veterans and Farm placement work and the

administration of financial relationship with the states the work of the United States Employment Service falls into two broad categories, the Division of Operations, and the Division of Standards and Research. The Operations Division controls such Federal regional offices as may be established, and maintains contacts with all cooperating state services. The Standards and Research Division is designed to guide the cooperating employment services in developing uniform procedure, and to provide leadership for the states in the effort to improve their employment services. This paper is concerned with the work of the latter division.

There are three special sections in the Division of Standards and Research of the United States Employment Service. The Division of Minimum Standards and Procedures has as its function the development of standards of selection and training of personnel; standards of organization and functioning of advisory councils, both state and local; the development of suggestions as to minimum standards for premises; and finally, the working out of suggested manuals of procedure in the employment offices. So far we have had to devote our attention to the question of State Advisory Councils, the matter of selection of personnel and questions regarding minimum standards of premises. We hope shortly to make available to state employment directors suggested manuals of procedure. We hope also to provide suggested training programs which may then be used as a minimum basis on which state organizations can build.

Our second function in this Division

is that of providing employment information. This means an organized statistical program. It seems to us that it is one of the basic obligations of an employment service to become an authoritative source of information about labor market conditions in so far as they can be reflected through an employment service.

We have had inadequate employment information in this country. Even the payroll and general employment figures which have come through the United States Bureau of Labor Statistics and the State Labor Bureaus have been limited in their effectiveness, because there were not enough field stations through which this information could be obtained. We are looking toward a statistical program which will enable us to provide not only basic information as to the number of people seeking work, number of placements, and general groupings of industries in which they are finding employment, but will enable us to answer a great many additional questions which are being asked us daily: specific information as to the occupational fitness of various groups of workers, age groupings of the people seeking work, the limitations which employers are seeking in regard to age, and preliminary training.

It seems desirable, therefore, to aim at an ultimate statistical program which will enable us to provide occupational information of a detailed character. There are perhaps nine hundred or a thousand occupations which commonly move through employment services. Eventually we should be in a position to get adequate information about all of these occupa-

tions. It is our desire to individualize the service of the public employment offices, to get away from mass handling and group treatment and to think of every individual as representing a specialized type of service which is needed in some industrial, commercial or social enterprise. In order to do this we need adequate information about the individual and the job.

I have discovered, in the course of two years' experience with a State Employment Service, that it is not an easy thing to introduce new statistical reports and to change established procedures. Nevertheless, it is also my experience, and I am sure it is yours, that as an effort is made to adjust to a more adequate statistical program, certain definite benefits accrue, not only in information made available, but in better organization of files and office procedures. While it is a slow process, I am sure you will agree that it is a worthwhile process.

We now have available the application forms, employer order cards, cross index cards, and other forms which have been worked out after conferences with representatives of state employment services. We realize there are limitations in existing facilities, and we have tried to set up these basic forms so that they will make it easy to get the material needed for reports, and to organize the data with that object in view.

We are recommending at the present time two types of reporting. Our ultimate hope is to set up a daily system of reporting transactions from the local offices to the state administrative offices. We never contemplate a regular system of daily reports from

the state or local offices to the central office in Washington, but it is our conviction that a daily reporting system of the journal type is, perhaps, the most effective way of providing a state administrative office with the type of information we are seeking. It is because of our conviction that the ultimate objectives are better served by a daily reporting system, that we are asking certain offices to undertake this daily reporting plan. Albany, New York, through the fine coöperation of Mr. Kaufmann and Mr. Neumann is coöperating directly. Rochester is coöperating in a very fine way by continuing their experiment with a more adequate form than we can now use in some other cities. With Philadelphia, Cleveland, and the three Minnesota cities of Minneapolis, St. Paul, and Duluth, we have six or eight cities that are coöperating directly with us and are forwarding to us copies of these daily reports which enable us to get 1,000 or more occupational classifications, age groupings, wage data and other significant material.

For the offices which are not in position as yet to undertake this sort of program, we are prescribing at the present time a weekly report. The basic classifications in these weekly reports are industrial, because we find we can get from daily and weekly reports an industrial classification comparable to census data. We do not feel that any occupational classification that would not go beyond 20 or 30 groups would be particularly useful. We feel that it is more important to have accurate and detailed occupational classifications from a few centers

than to have inadequate data from all sources. We have completed arrangements with the Bureau of Labor Statistics so that they are the compiling agency and the publication agency for our statistical information. A section of the Monthly Labor Review will be set aside for employment office material, which will be of three types.

The first series will be based on weekly reports from all of the state offices. The second series of data will be much more comprehensive and detailed, and will be based on daily reports from six or eight centers now coöperating directly with us. There are three or four additional cities that have now indicated a desire to coöperate, so that by the first of the year we will have ten or twelve representative large American cities providing information of the more extensive character. These two series will appear regularly in the publication.

In the third series, we wish to publish any special data available from weekly or daily reports that will serve some problem in which the offices are interested. We intend to try to present cross-section pictures that may be of interest.

The third function of our Division which is of extreme interest to us is the development of research and demonstrations. It is our feeling that we have an obligation to provide some leadership in the development of higher standards of employment office operation. During the first year our funds are extremely limited and we are undertaking projects in coöperation with certain foundations and the Social Science and National Research Councils. One project is to develop

job analysis and occupational classifications. We hope to be able to develop over a period of years an adequate technique of job analysis and a program of classifying occupations so that we may eventually reach a point where we will have a number of occupational groups cutting across industrial lines. In this way our problem of transferring people from obsolete industries to those which have some opportunity for development will be greatly facilitated. The employer usually wants someone with previous experience in the occupation. If we can succeed in creating an understandable classification of occupations, we believe that we will greatly simplify this problem of handling the adjustment of workers.

A second program, which is closely related to the first, is designed to set up standards for the selection of people for various occupational groups. We hope to carry forward over a period of years an adequate study, so that in terms of experience, training and special abilities, we shall be able to say that the successful people in this group of occupations have these minimum qualifications; and we can then begin to develop a technique for selecting those people who have the minimum qualifications for success.

A third project is the development of special industry placement bureaus. I have been greatly interested in conferring with representatives of certain European placement services to discover the extent to which they have moved along these lines. We are moving strongly in the direction of industrial organization in this country, and it seemed to be the

experience of these European placement centers that a much closer relationship to the needs of the industry results when these special bureaus exist. It seems a worthwhile experiment. We are contemplating two small demonstrations, one in the hotel and restaurant industry, and one in a small industry, such as hosiery, which is compactly located in four or five centers. The demonstration would specialize in the requirements or needs of that industry, coöperating with the code authority and attempting to determine whether that kind of an approach is effective. If it succeeds, and becomes a worthwhile procedure, we would assume that such specialized bureaus would be incorporated in the state plans beginning with July 1, 1934. I might say, in passing, that we have been receiving an increasing number of requests from various industrial groups, directing our attention to these special industrial bureaus.

It is obvious that the development of higher standards of employment office performance must be a slow process. We are committed to an intensive

rather than an extensive program of development. It does not seem possible to bring all offices along at the same rate. We plan, therefore, to encourage the development of so-called demonstration centers which may serve as a leavening influence throughout the Service.

During the first year we hope to develop a number of such employment centers and to concentrate the field work of the research projects around these centers. In this way local participation in the development program can be encouraged and the maximum use made of existing resources and facilities. Already a number of communities have shown interest in such a program, and we are hopeful that the number will increase.

You will understand, of course, that the foregoing sketch of our plans for the development of standards in the United States Employment Service is in the nature of a "blue-print" of our present plans, and the development of the program may lead to a final structure which differs in many particulars from the original outline.

News Notes

GUIDANCE AND PERSONNEL ASSOCIATIONS CONVENE

Five national guidance and personnel associations will hold their annual conventions simultaneously in Cleveland from February 21 to 25. These organizations, together with others which will share in joint sessions, are as follows: National Vocational Guidance Association, American College Personnel Association, National Association of Deans of Women, National Association of Principals of Schools for Girls, Teachers College Personnel Association, Personnel Research Federation, Southern Women's Educational Alliance, and National Federation of Bureaus of Occupations. Detailed programs of the first three organizations are printed in the February number of *Occupations, the Vocational Guidance Magazine*.

Members and friends of the Personnel Research Federation in attendance at the Cleveland conventions are invited to meet for luncheon at 12:30 on Friday, February 23rd, at the Hotel Statler, and also with the American College Personnel Association following the luncheon in a special program which will include a Roll Call of Researches in Progress, and more extended reports on recent researches into the significance of items on college personnel records.

"The Alleged Over-Population of the Colleges" will be the theme at the luncheon meeting, to be addressed by Robert L. Kelly, Executive Secretary of the Association of American Colleges. Discussion of the facts regarding unemployment of college graduates and their implications for college recruiting, admissions practices, curriculum modifications, and research on changing occupational trends will be led by Morris S. Viteles, of the University of Pennsylvania.

Two joint sessions will be held, one on the

morning of February 22nd, and the other a luncheon meeting on Saturday, February 24th. At the first session addresses will be made by Harvey N. Davis, Arthur E. Bestor, and Edward McGrady on the general theme, "Our Society in Crisis and Reconstruction." The Saturday luncheon meeting of the allied organizations will consider possible fields of collaboration in the light of developments in the several conventions. Francis F. Bradshaw will preside.

NATIONAL MANAGEMENT COUNCIL

The National Management Council held its First Annual Meeting at the Hotel Pennsylvania, January 9. The principal speaker of the dinner meeting was Harlow S. Person, Managing Director of the Taylor Society.

Taking as his topic "Management in Self-Governed Industry," Dr. Person forecast the probable reconstruction of many phases of management. Discussion was led by Carle M. Bigelow, William H. Leffingwell, C. Oliver Wellington, Ordway Tead, and Wallace Clark. Harry Arthur Hopf, president of the Council, presided.

RESEARCH POSSIBILITIES SUGGESTED BY THE SECOND EDUCATIONAL CONFERENCE

The proceedings of the Second Educational Conference held at the Hotel St. Regis in New York on November 2 and 3, which have just been published by the American Council on Education under the title *Educational Measurement and Guidance*, should attract the attention of those interested in educational research, as most of the addresses delivered at the conference suggest various avenues along which further studies may be directed.

In his opening address Dr. Ben D. Wood indicated in general terms one of the most important fields of investigation open to the research worker. Until recently studies

of educational data have dealt with age or grade groups at given times and little attention has been paid to the continuity of growth in the individual as such. Growth studies have been based upon data derived from large selections of different pupils at different age levels, rather than upon a sufficiently large group of pupils who are studied over a period of years. The introduction of the use of long series of comparable educational measures which may be employed year after year with the same individual, makes it possible to study developmental trends of different types of individuals over a long period of time. Such an approach to the study of growths is aided not only by the existence of such series of comparable tests as those being prepared by the Cooperative Test Service, but also by the introduction and maintenance of cumulative records, such as those published by the American Council on Education. These records, if they include annual measures attained from the use of comparable objective tests, as well as other significant information, furnish the material for studies of enormous value, especially in the field of personnel and guidance.

In Commissioner Zook's treatment of the subject of accrediting schools and colleges, he disclosed the need for research in connection with the improvement of accrediting procedures, particularly in devising the means of gauging the educational potentialities of the pupils in different schools before passing judgment upon teaching success as determined by the results of achievement tests.

The whole field of teaching appraisal, when student capacities as well as achievements are measured in comparable terms, is one which is deserving of most intelligent and persistent investigation. It is but one phase of the whole problem of "prediction" which, thus far, as has been mainly attacked from two other points of view; namely, the prediction of individual student success in academic work in general or in some specific field of study, and the validity and reliability of certain examining instruments in predicting such success.

Professor Carl C. Brigham touched upon the other phases of this problem in his ad-

dress, and made it clear that, though we have a long way to go before our predictions of the future academic success of individuals may be nearly as accurate as it is desirable to have them, means are being formed of improving our "betting systems," as he termed them, and of devising more reliable and valid instruments for this purpose.

When the Committee on Records and Reports of the Commission on the Relation of School and College of the Progressive Education Association offers its completed plan for judging and reporting attitudes and personality traits, as described by Dr. Eugene R. Smith, and the selected traits in their various types are used as media of student appraisal, there should be abundant opportunity to study the effectiveness and consistency with which these estimates are being used, the degree to which they are successfully describing totally separate and essential qualities, and the relationship existing between the possession or non-possession of these attributes and success in various aspects of life and types of work.

Dr. E. F. Lindquist's paper dealing with the techniques of test construction gave evidence of the care with which test builders have been attacking their problems, and the desirability of continued research to determine the degree to which tests succeed in performing the functions they are designed to perform, and to point the way to further improvements in test construction.

WINSTON B. STEPHENS.

CIVIL SERVICE RECOMMENDATIONS

The United States Civil Service Commission, in its Fiftieth Annual Report to the President, made numerous sound recommendations for improvement of the government Service. The report recommended, among other matters, legislation to establish a uniform optional retirement age of 60 years after thirty years of service; to authorize the Commission to investigate and conciliate differences—arising out of removals, reductions, or suspensions—between employees and their superiors, the decision of the Commission to be binding; to place in the competitive classified service postmasters at first-, second-, and third-

class offices; to limit veteran preference to those honorably discharged from the military branches after service in time of war.

EMPLOYMENT CONDITIONS IN MUSIC

Dr. Hazel M. Stanton, in charge of the Psychological Corporation's Musical Talent Service, has prepared at the Editor's request the following discussion of employment opportunities for musicians.

The avenues through which employment in musical activities increased and thrived up to and through 1928 have been seriously curtailed since that time. Private teachers of music in all lines have suffered more and in greater numbers when their work was limited to one instrument. Many adjustments are being made to the changing conditions. Instrumentalists and singers from the highest to the poorest artistic levels have dropped out or have experienced a shift in their musical pathways, many of them finding an outlet through local and national broadcasting systems. Although satisfactory figures are lacking, it is probable that the profession has been purged of many of its less competent members.

Directors, leaders, and supervisors of music, of opera, of radio broadcasting, bands, choirs, and orchestras are confronted with the problem of creating new groups not only for playing and singing in communities but as listeners. Composers and music scholars may have known a slight increase in the encouragement of their talents from the steady gain in recognition of the non-performing musician through the modern composer's concerts and development of the field of musicology in this country. The chaotic condition through which the musical profession and music education are now passing will probably resolve into an integrated effort to raise music study and expression from the level of playing and singing for entertainment alone and for exploitation to its place in the cultural and social phases of life in the new era.

The employment of theatre musicians was seriously affected in 1928-29 with the introduction of mechanical music; one city reports that over 60 per cent of the musicians in all white theatres were displaced prior to 1930, and that the general employ-

ment situation among musicians who were permanently or temporarily employed at the time of the investigation (Nov. 1931) was slightly under 50 per cent. Another community estimates that the introduction of sound pictures reduced musical employment to 23 per cent of the peak, but this was raised to 50 per cent by concentrated effort previous to the depression.

The generalized report of the census bureau, although it has the disadvantage of grouping all musically employed persons in the one group of musicians and music teachers, has the distinct advantage of recording such information over a period of time. The number of musicians or teachers of music per each 10,000 of the gainfully occupied population in 1910, 1920, and 1930 respectively has varied in the United States from 18 to 17 to 22 for men and from 105 to 85 to 74 for women; in New York City it has varied from 60 to 55 to 66 for men and from 99 to 76 to 69 for women. The men show a slight decrease in 1920 with a significant increase in 1930. The women, however, show a steady decline over the three decades.

While we have realized for long that New York City is the goal of many aspiring young musicians, the census of 1930 gives us exact figures. At the time of the census 18 per cent of all men and almost eight per cent of all women musicians lived in New York City. Employment opportunities in this city appear, however, to have been vastly over-rated, since the census showed considerably greater unemployment among musicians in New York than elsewhere.

MODERN PROBLEM BOOKLETS

American Education Press, Inc., of New York has initiated a noteworthy series of fifteen cent pamphlets called *The Modern Problem Series*. Among the twenty booklets issued so far are the following: *Opportunities for Work in a Machine Age*; *Unemployment Insurance*; *The Depression—What Caused It?*; *Economic Planning—Can Depressions Be Abolished?*; and *Recent Economic Changes and Their Meaning*. Each pamphlet contains suggestions for further reading.

REGISTRATION IN AMERICAN UNIVERSITIES
AND COLLEGES

Despite the depression, attendance this school year of full-time students in American universities and colleges is only 5 per cent below that of last year, according to a survey made by Raymond Walters and published in the December 16 number of *School and Society*. We quote Dr. Walters' generalizations regarding attendance trends in higher education:

"1. Liberal training maintains its hold. Young men and women in practically undiminished numbers are continuing to take liberal arts courses in the universities, almost equally in the privately-controlled institutions having tuition fees as in the institutions under public control where tuition is free, with varying incidental fees.

"2. There is a definite attendance trend away from certain types of professional and vocational training. Preparation for teaching is the most pronounced instance of this; there are decreases of around 13 per cent in university graduate schools which prepare largely for teaching in schools and colleges, and decreases likewise in university schools and departments of education and in separate teachers colleges. Engineering and architecture reflect recent industrial conditions in their decreased enrolments. There are similar drops in journalism, music, and pharmacy.

"3. There are small attendance increases and decreases in other professional fields. As to schools of law, medicine, and divinity, there are indications of limitation in num-

bers admitted; the totals this year are each slightly higher than last. The university schools of business administration report totals less than 4 per cent under those of 1932. The decreases in agriculture, forestry, and dentistry are about this same percentage."

OCCUPATIONAL TRENDS

The February number of *Occupations, The Vocational Guidance Magazine*, is given over to the subject of "Occupational Distribution and Trends." It includes six articles on several phases of the topic. The opening article by Walter V. Bingham describes changing demands for various kinds of skills and abilities, and discusses the discrepancy between abilities and the demands for them. An article on the underlying economic theory, by Harold F. Clark, discusses the necessity of estimating future opportunities in occupations and planning occupational distribution. O. Milton Hall, in "How Occupational Trends Are Studied," report on methods which have been used, and suggests how these different techniques and methods of approach must be combined, if the findings are to be really useful in counseling. In an entertaining manner, Charles S. Slocombe describes methods of estimating the future absorptive capacity of the occupations in a typical community. "Ten Overcrowded Occupations," by Gladys L. Palmer, describes a study of labor surplus in Philadelphia. Owen E. Pence contributes a list of implications for vocational adjustment suggested by a compact analysis of "Recent Social Trends."

Personnel Books

EDITED BY O. MILTON HALL

THE ART OF CONFERENCE

By Frank Walser. New York: Harper, 1933, 305 pp., \$3.00

Reviewed by GLENN A. BOWERS, *Industrial Reserves Corporation of America*

The idea that there are recognizable conference situations and processes which recur in meetings is a comparatively new one. The concept that these situations and processes may be subject to scientific analysis and brought under a reasonable degree of control is of even more recent origin. Few yet are convinced that this is practicable to any substantial degree. Students of conference problems waver between the view that conference participation is an art and the view that it is potentially, at least, a scientific process.

Mr. Walser has chosen a title which emphasizes the former of these two divisions of thought. His analysis, however, lays considerable foundation for support of the scientific point of view. This latest book on the subject of conference methods is couched in the style of the theorist, yet the language is simple and direct, and the manner of presentation makes it clear and concise throughout. For one seriously interested in the subject, the book affords indeed fascinating reading.

The Art of Conference should go a long way in directing further conscious attention to the processes of discussion meetings. It is also valuable to those who already have some knowledge of these processes in that it restates and puts new garments on many of the fundamental principles already recognized.

There can be little, if any, quarrel with the statements of the author by one who has explored the intricacies of conference meth-

ology. On the other hand, sincere congratulation can be expressed for the noteworthy contribution made in this extension of the literature of the subject. One need not be critical because the book does not present a substantial addition to the substance of knowledge of conference process. The author was extremely well advised in choosing a vehicle which did not get tangled up with its own wheels and in avoiding word pictures which would require an etymological magician to dissect them.

The publishers appropriately feature the "how" of conference as set forth within the covers of this book. Those who seek some instruction in the mechanics of conference may find it presented in chapters entitled; "Planning for the Conference" and "Conducting the Conference," also in examples set forth in the appendix. The remainder of the volume is philosophical in character and treats of sociological aspects of modern conferences.

Finally, the author has attempted to address persons with widely diversified interests. Citations and examples are drawn heavily from the field of international conferences and those existing under programs of education and of social work. Illustrations from business and industry are, however, not lacking. The serious reader, whatever may be his specialized field of activity, should have little difficulty in translating for his own use ideas expressed in connection with conferences in different settings than his own.

HEALTH IN INDUSTRY

INDUSTRIAL HEALTH SERVICE. By Leverett Dale Bristol. Philadelphia: Lea & Febiger, 1933, 170 pp., \$2.00

PUBLIC HEALTH NURSING IN INDUSTRY. By Violet H. Hodgson. New York: Macmillan, 1933, 249 pp., \$1.75

Reviewed by FRANCIS L. HARMON, *New York*

Although employer interest in the problems of industrial health originally evolved from legal coercion, that field has today been developed far beyond the purely selfish stage. Practically all companies now maintain health services which are more or less complete, depending upon the size of the organization and the funds available for this purpose. In many cases, however, employers are held back by lack of knowledge as to how to make the best use of the means at hand, in order to develop an efficient and well-rounded health program.

Dr. Bristol in his *Industrial Health Service* has written a thoroughly practical treatise to meet this need. His book is divided into three parts, representing three points of view: that of the executive, the supervisor, and the worker. For the first he points the way to a sound industrial health program; one in which the emphasis is laid primarily upon prevention rather than cure. For the supervisor, medical director, or personnel administrator, the more specific steps in carrying out this program are outlined. In

the last part the same material is treated in a semi-popular style, for the benefit of the worker himself. The book is noteworthy in its completeness, covering all phases of the problem, and presenting the material in a non-technical, interesting manner.

Miss Hodgson addresses herself to one specialized unit in the industrial health field: the nurse. Setting forth to "indicate the potential field of public health nursing in commerce, trade, and industry," she has written a practical handbook for that profession.

Beginning with a discussion of the relationship between company management and the nursing service, Miss Hodgson proceeds to describe the principles and procedures of this service. She views the nurse's functions not simply in the light of service to the company by which she is employed, but as an important factor in the community at large. Two appendices dealing with the objectives of public health nursing in various groups, and a bibliography add to the value of the work.

FINDING A JOB

By Roger Babson. New York: Revell, 1933, 191 pp., \$1.50

Reviewed by G. A. HUTCHINSON, *Adjustment Service of New York*

This book, the latest of a huge depression-bred crop of writings on how to get a job summarizes most of what has been said by all the others and by Mr. Babson, himself, in other books and magazine articles. It deals with such a wide diversity of subjects that one is likely to lose the connection between some of the advice on financial investments, or the Hebrew laws concerning loans, and the technique of selling one's services to a prospective employer.

When he does come to the point and talk about how to select the proper job and how to get it, the author is very sound in his advice, but also trite. It seems perfectly self-evident that the job hunter should keep himself informed as to what jobs may be available and be willing to work hard in order to hold a job. These ideas and others similar to them have been expressed so many times that job-seekers are tired of hearing them.

But for those who can take a somewhat more detached view of the problem of job getting there is much in this book well

worth reading. There is an underlying philosophy of work and a long range view of a job as a life work which is most wholesome.

TESTS FOR ACCIDENT PRONENESS

Report No. 68, Industrial Health Research Board, 1933. By E. Farmer, E. G. Chambers and F. J. Kirk. 44 pp.

Reviewed by CHARLES S. SLOCOMBE, *Personnel Research Federation*

The English Industrial Health Research Board in 1926 "started an inquiry to see to what extent the factors involved in individual susceptibility to accidents could be measured." The report under review is the third of a series by Mr. Farmer and his associates telling of their efforts at measurement.

Five years ago Mr. Farmer gave a series of so-called sensori-motor tests to some apprentices entering mechanical trades. Now he compares the test records with the accident records of these boys.

(1) Using every favorable device and method he can, Mr. Farmer is unable to get a correlation better than .3 between tests and accidents.

(2) Discarding correlation and using other statistical methods, he finds that the difference between actual distributions of test scores and accidents and the theoretically expected ones is not significantly different from chance (though it nearly is).

(3) Using again another method he finds that if the boys with the lowest test scores had been rejected the accident frequency of the remainder would have been 25 per cent less.

These are his results. They are disappointing. His third method of validation is good, but may on his own showing be due entirely to chance, so that if he repeated the experiment with another group he might get no such result.

Four comments may be made:

(1) Farmer's tests, heavily weighted with reaction time, were good eight years ago, but would not be so regarded today. This is always a disadvantage in long-time researches of tests. You have to wait eight years to see if a set of tests is any good and in the meantime other much better

tests have been developed. So you never catch up.

(2) Many factors may cause accident proneness, so that even with perfect psychological tests no strong relationship between tests and accidents can ever be gotten. (See *British Journal of Psychology*, 1930, p. 35.)

(3) Accident proneness or susceptibility is complex. Age, experience, personal habits, training, attitudes, physical condition as well as psychological factors such as reaction time, fatiguability, perseveration, have been found to enter into it. The major cause of accidents will vary from one individual to another.

(4) It is suggested that Mr. Farmer and his associates (or any one else interested in this subject) would make a more significant and satisfactory contribution if they turned their efforts away from tests to broader research which takes all these causes into consideration.

AMERICAN LABOR AND THE NATION. Edited by Spencer Miller, Jr. Chicago: Univ. of Chicago Press, 1933, 220 pp., \$1.00.

The publication of this series of twenty radio addresses will undoubtedly be welcomed by persons interested in this phase of industrial relations. The aim of the book, as stated by the editor is "to present for the average citizen a record of Labor's contribution to American life together with a statement of the point of view of Labor on current economic problems;" and it must be said that this plan has been carried out admirably, both in the selection of topics and in the choice of speakers.

The addresses are presented in two series, the first of which deals with the historical development of Labor in America. The

second series is devoted to the interpretation of Labor's stand on such questions as the closed and open shop, wages and hours, unemployment, international relations, collective bargaining, immigration and the like.

In evaluating almost any work dealing with contemporary problems, it is essential not to lose sight of the rapidity with which events have crowded upon one another during recent months. Especially is this true in the field of industry; and the fact that these lectures were originally delivered during the summer and autumn of 1932 may tend to confuse the reader's orientation towards some of the controversial issues. Nevertheless, *American Labor and the Nation* does represent a useful and an interesting contribution to the advancement of understanding and sympathy among social classes.

LABOR PROBLEMS IN AMERICAN INDUSTRY.

By Carroll R. Daugherty. New York: Houghton Mifflin, 1933, 959 pp., \$3.50.

Labor Problems in American Industry is rich in well-organized detail and broad in its approach. Part One reviews the psychological, social, economic, historical, and political factors which are significant to an orientation in industrial relations; Part Two analyzes five main phases of labor disharmony—insecurity, inadequate income, work periods, substandard workers, and industrial conflict—from the standpoint of effects and causal factors; and Part Three describes in some detail the attempts of unions, employers, and the state to secure adjustment.

THE THIRD AMERICAN REVOLUTION, AN INTERPRETATION. By Benson Y. Landis. New York: Association Press, 1933, 156 pp.

Mr. Landis has undertaken to summarize and interpret for the lay reader some of the more revolutionary economic and political changes which have taken place since March 4, 1933. Visualizing the process as a bloodless revolution, he finds its origin in the "clash of a combination of the South and the West against the industrial and financial East."

The banking crisis, the problem of inflation, the N. R. A., and the farm relief question are all treated from the viewpoint of one favorably disposed toward the Roosevelt administration. Mr. Landis is optimistic regarding the future, and closes with an expression of confidence in the President's ability to carry through his policies and ideals.

EDUCATION ON THE AIR. Fourth Yearbook of the Institute for Education by Radio. Edited by Josephine H. MacLatchy. Columbus: Ohio State University, 1933, 380 pp., \$3.00.

As its name implies, this yearbook presents a comprehensive survey of the progress during the past twelve months in the use of the radio as an educational device.

Part I is devoted to the Proceedings of the Fourth Institute for Education by Radio. A number of papers and round table discussions are reproduced in full, under five chapter headings: National Aspects, Broadcasting Techniques, School Broadcasting, Research and Measurement, and Educational Stations and Programs. In Part II eleven papers appear, all dealing with recent research in radio education.

This book should prove valuable to broadcasters and listeners alike. The former will find in it useful material regarding the preparation and delivery of addresses; and the latter, many suggestions as to how to gain the most value from educational programs.

METHODS OF STATISTICAL ANALYSIS IN THE SOCIAL SCIENCES. By George R. Davies and Walter F. Crowder. New York: Wiley, 1933, 355 pp., \$3.25.

This is a well-balanced and useful introductory text for the study of statistics with special reference to applications to the fields of economics, sociology, and political science. Attention is concentrated upon the methods and logic of statistical analysis, while space is saved by concise treatment of the usual methods of presenting data in graphic form. The exposition of methods of computing averages, dispersion, index numbers, trends, cycles, and correlations

is clear and thorough. As a special feature, each chapter is divided into two parts, giving first the more elementary and basic processes, and then separately the more specialized and complex treatment. Practical exercises are abundant.

THE CHARACTER EMPHASIS IN EDUCATION.

By Kenneth L. Heaton. Chicago: The University of Chicago Press, 1933, 415 pp., \$3.00.

Those who hold with the principles and methods of progressive education will find profitable reading in Dr. Heaton's latest work. Writing primarily from the point of view of the class room teacher, the principal and the supervisor, the author sums up what he considers the more worthwhile contributions of education to character building.

Character is defined broadly as "doing the 'best' thing in each situation." With this definition in mind, Dr. Heaton stresses social value and meaningfulness to the child in his discussion of educational methods.

Illustrations from actual teaching experience make up at least half the book. Theory and controversy are deliberately avoided; but a topical bibliography is provided for those readers who may wish to delve into this aspect of the question.

GENERAL PSYCHOLOGY. By Gardner Murphy. New York: Harper, 1933, 657 pp., \$2.75.

PSYCHOLOGY WORK-BOOK. By E. S. Marks and E. L. Horowitz. New York: Harper, 1933, 97 pp., \$0.50.

Gardner Murphy's book takes its place among the very finest of introductory psychological texts. It is a presentation of psychological fundamentals derived from experimental evidence; it is expertly written; it abounds in illustrative material, charts, graphs, and photos.

The *Psychology Work-Book*, containing laboratory exercises, problems, and objective-type quiz questions, was prepared especially for use with Murphy's text.

GREAT MEN OF SCIENCE. A History of Scientific Progress. By Philipp Lenard. New York: Macmillan, 1933, 389 pp., \$3.00.

The subtitle of this book seems more fitting in the place of the title. The book is not about great men of science. It is about what they contributed. "Lenard presents these great men of science in such a way that they become living figures . . ." says the blurb on the jacket. It appears that a stock phrase slipped in unnoticed, for in general not more than two or three paragraphs is given to each man as an individual.

Since it is more a history of the growth of scientific knowledge than of the contributors, the book is not as inspiring as true biographies can be. Interest is added, however, by describing together the various contributions of each man, as a biography would do, rather than describing in a drawn-out fashion the progress of each development as bits are added by many men.

TRADE ASSOCIATIONS. By W. J. Donald. New York: McGraw-Hill, 1933, 437 pp., \$4.00.

This book needed to be written anyway, but the impetus given to trade associations by the recovery movement greatly increases its timeliness and usefulness. It is an authoritative and practical handbook of purposes and procedures of associations, describing methods of organization and management, development of policies, selection of personnel, and many other matters. Business executives, as well as trade association executives will find the book useful.

New Books

ADJUSTMENT PROBLEMS OF COLLEGE FRESHMEN. By Earle E. Emme. Nashville: Cokesbury Press, 1933, 125 pp., \$2.00.

APPLIED PSYCHOLOGY. By R. W. Husband. New York: Harper, 1933, 654 pp., \$2.90.

CURRENT SOCIAL PROBLEMS. By John M.

- Gillette and James Melvin. New York: American Book, 1933, 829 pp., \$4.00.
- EXPERIMENTAL STUDY OF REWARDS. By Edward L. Thorndike. New York: Teachers College, Columbia Univ., 1933, 72 pp., \$1.50.
- HEREDITY AND ENVIRONMENT; STUDIES IN THE GENESIS OF PSYCHOLOGICAL CHARACTERISTICS. By Gladys C. Schwesinger. New York: Macmillan, 1933, 492 pp., \$4.00.
- HUMAN PROBLEMS OF AN INDUSTRIAL CIVILIZATION. By Elton Mayo. New York: Macmillan, 1933, 194 pp., \$2.00.
- INDUSTRIAL HEALTH SERVICE. By Leverett D. Bristol, M.D. Philadelphia: Lea & Febiger, 1933, 170 pp., \$2.00.
- METHODS IN SOCIOLOGY. By Charles A. Ellwood. Durham, N. C.: Duke Univ. Press, 1933, 248 pp., \$1.50.
- RATIONALIZATION MOVEMENT IN GERMAN INDUSTRY. By Robert A. Brady. Berkeley: Univ. of Cal. Press, 1933, 487 pp., \$5.00.
- UNEMPLOYMENT INSURANCE. By S. P. Low and St. V. F. Coules. New York: Pitman, 1933, 123 pp., \$2.00.
- VOCATIONS. By William M. Proctor. Boston: Houghton, 1933, 400 pp., \$1.48.

Current Periodicals

PREPARED BY LINDA H. MORLEY, *Industrial Relations Counselors, Inc.*

ECONOMIC RECOVERY

WAGNER, ROBERT F. (Senator from New York). Primary economic objectives of the N.R.A. *American Federationist*, Nov. 1933, vol. 40, p. 1197-1201.

Believes satisfactory adjustment in wages, together with the coordination of wages and prices, is the central economic problem of today. Along with this is the need for regulating wage schedules periodically to conform to general economic trends. Reduction of hours of labor, supplying of credit needs, and direct aid to the jobless, are other steps which Mr. Wagner considers necessary to effectuate the primary economic objectives of the Recovery Program. Discusses also the value of trade unions, which are provided for under the Recovery program.

EMPLOYEE REPRESENTATION IN MANAGEMENT

Bethlehem Steel Corporation. Fifteen years of employee representation. *Bethlehem Review*, Sept. 25, 1933, no. 25, p. 1-3.

In an introductory statement Eugene G. Grace, President, U. S. Steel Corporation, points out that the employee representation plan complies with the collective bargaining provisions of the N. I. R. A. which do not require nor prohibit union affiliation. This is followed by a brief summary of the operation of the plan during its fifteen years of existence and a tabulation of the disposal of 5,918 cases it has handled. Naturally the largest number related to employment and working conditions, with various types of wage questions second, and safety third. Health, pensions, housing and education are some of the other subjects presented, and the number of disposals are grouped

under affirmative, negative, withdrawn and compromise.

EXECUTIVES

HOPF, HARRY ARTHUR. Measuring executive accomplishment. *N. O. M. A. Forum*, June, 1933, vol. 8, p. 3-6. (Abstract in *Management Review*, Oct. 1933, vol. 22, p. 300.)

As a result of an investigation of salaries of presidents of life insurance companies, the position is taken that salaries of executives are definitely related to the size of the organizations. This is legitimate because of the greater difficulty in obtaining executives with ability to integrate many internal activities and guide the external competitive activities.

KELLEY, PEARCE C. (Assistant Professor of Business Administration, University of Arkansas). Selecting executives. *Personnel*, Aug. 1933, vol. 10, p. 8-27.

In this paper, presented at the American Management Association Personnel Conference, Chicago, February 8, 1933, the author regards the selecting of executives as differing from selection for non-executive positions in complexity, but resembling selection for other positions in requiring knowledge of two interdependent variables: requirements of the position to be filled, and qualities of the person who could satisfactorily fill the position.

He discusses various methods in use, suggests factors to be considered, methods for discovering and evaluating potential executive ability within an organization, and records to be kept.

STEVENSON, JOHN A. (Vice President, The Penn Mutual Life Insurance Company).

Training executives. *Personnel*, Aug. 1933, vol. 10, p. 27-31.

This paper discusses characteristic traits of the executive and gives details of the training program carried out by the Penn Mutual Life Insurance Company.

HEALTH

BRISTOL, LEVERETT D. (M.D., Dr.P.H., Health Director, American Telephone & Telegraph Co., N. Y.). Health activities; need, principles and practical suggestions. *Industrial Medicine*, Aug. 1933, vol. 2, p. 85-94.

Discusses the need for measuring industrial health service. Gives sample forms for proposed health appraisal surveys. The purpose of the appraisal is primarily to show the extent and quantity of such work, and to serve as an objective measurement to be used by business executives and personnel representatives in scoring their own health activities, and comparing their records from year to year.

ORGANIZATION AND ADMINISTRATION

MOONEY, JAMES D. (President, General Motors Export Company). Organizing the executive group. *Personnel*, Aug. 1933, vol. 10, p. 3-8.

This paper was presented at the American Management Association Personnel Conference held at Chicago, February 8, 1933. It discusses the structural principles of organization, which the author believes have not had enough consideration. He divides his discussion according to the two forms of coordination: the perpendicular, which operates through delegation of authority; and horizontal coordination: "... which operates not through authority and the function of command, but through the universal service of knowledge."

PENSIONS

United States. Labor Statistics Bureau. Experience under state old-age pension laws in 1932. *Monthly Labor Review*, Aug. 1933, vol. 37, p. 251-262.

Gives the results of a survey for 1932. Seventeen states had such laws but

pensions were actually paid in only 15 states. At the close of the year, these systems were assisting 102,537 persons, and spent during 1932, \$22,616,004. The average pension paid was \$19.38, and in no state did the average payment equal the maximum allowable under the law.

The two states where no payments were made have optional laws, which can be accepted or rejected by individual counties.

Details by states are given covering: number of adopting counties, number of pensioners and amount paid for 1931 and 1932; extent and coverage of the pension systems in 1932; cost of pensions, 1931 and 1932; and progress of the old-age pension movement since 1923.

STATISTICS

United States—Central Statistical Board. Formation of Central Statistical Board. *Monthly Labor Review*, Sept. 1933, vol. 37, p. 552.

Statistical operations of the Federal Government in connection with carrying out purposes of the National Industrial Recovery Act, are to be coordinated and standards formulated. Fund of \$20,000 was made available.

TECHNOLOGICAL UNEMPLOYMENT

HASTINGS, HUDSON B. (Professor of Industrial Administration, Yale University). Economic effects of labor-saving machinery on labor. *Management Review*, Oct. 1933, vol. 22, p. 291-298.

The author develops the thesis that the introduction of labor saving machinery does not tend to create permanent unemployment for the country as a whole. "In times of business activity, the number of people who can secure employment—except for the irreducible minimum of the floating unemployed—is approximately equal to the number of people able and willing to work, and labor-saving machinery and methods unquestionably tend to increase the wages of the working population taken as a whole." He reaches this conclusion by tracing theoretically the increased demands in

another industry or locality arising out of the introduction of labor saving devices in a given plant, locality or industry. The money saved by such a labor saving device "... is bound ultimately to appear as a demand for human service equal to the amount laid off in the factory. It is automatic."

TRADE UNIONS

PLOTEIN, ABRAM (General Organizer, International Ladies' Garment Workers' Union). Destruction of the labor movement in Germany. *American Federationist*, Aug. 1933, vol. 40, p. 811-826.

Outlines the developments which brought about the destruction of trade unions. The first attack was against the trade union press. The next was the terrorism visited by the Nazis, on the different organizations, and on individual leaders. In many instances mail was not only censored, but never delivered. Persistent undermining "sapped" their powers, and the German Fascists were able to take them over. This article gives a detailed portrayal of events as they occurred between January and May, showing the reaction of political parties and the effect of the leaders on the activities of labor. Questions what will come after Hitler, and suggests the possibilities of a monarchy, or a revolution.

UNEMPLOYMENT INSURANCE

Growth of the job insurance program an evolutionary development. *American Labor Legislation Review*, Sept. 1933, vol. 23, p. 146-154.

A résumé of the work of the American Association for Labor Legislation for unemployment insurance in the United States and of its coöperation with other organizations toward this end.

PERKINS, FRANCES (Secretary of Labor). Job Insurance. *American Labor Legislation Review*, Sept. 1933, vol. 23, p. 117-120.

Points out the advantages of mitigating

the unemployment problem by means of insurance. The provisions of Senator Wagner's bill for an American plan for unemployment reserves is commented upon favorably, for though this federal bill, if adopted, could apply directly only to the District of Columbia, yet it could serve as a guide for state legislation. Features especially noted are: its relationship to proposals for building up unemployment reserves along industrial lines, which allows it to be fitted into the provisions of the various codes; provision for the administrative authority, after investigation and public hearing, to require pooling of the employers' contributions, affording a spreading of the risk; making the cost of unemployment compensation a direct charge upon industry, thus stimulating effort toward stabilization of unemployment.

Senator Wagner has also introduced a measure giving Federal encouragement to states establishing acceptable unemployment reserves by permitting employers in such states to deduct from their Federal income tax a substantial portion of their contributions to unemployment reserves.

UNION MANAGEMENT COÖPERATION

TREPP, JEAN CAROL (Sarah Lawrence College). Union-management coöperation and the Southern organizing campaign. *Journal of Political Economy*, Oct. 1933, vol. 41, p. 602-624.

This article traces the evolution of the policy of participation of trade unions in the task of finding better and more economical methods of production, and its scientific application in the southern organizing campaign. Includes an appraisal of the use of union management coöperation as a device for securing recognition in the South. Believes the greatest obstacle in the South is the apathy of the workers, and that in order to win rank and file more of militancy than respectability is needed, and that when the next southern drive is launched "less will be heard of coöperation and more about strike funds and workers' rights."

WAGES

United States. Labor Statistics Bureau. Index numbers of wages per hour, 1840 to 1932. *Monthly Labor Review*, Sept. 1933, vol. 37, p. 632-633.

Table shows that general trend of wages per hour has been upward. In 1921 general level of wage rates per hour was 7 per cent, and in 1922, 11 per cent less than in 1920. From 1922 there was a steady increase until 1929, when the level was about 1 per cent lower than in 1920.

For 1930, 1931 and 1932, the levels were 1.7 per cent, 6.9 per cent, and 20.2 per cent respectively lower than in 1929.

Except for the periods of recession after the Civil War and again after the World War, this index number shows an almost consistent annual rise from 33 in 1840 to 229 in 1930, dropping to 186 in 1932. The all time peak was 234 for the year 1920. This index number is based on wages paid in currency with 1913 as 100, and excludes agricultural wages.

Classification of Occupations by Interests

BY EDWARD K. STRONG, JR., *Stanford University*

In what respects do professions differ from each other? What is the common core that makes certain occupations similar? Dr. Strong finds one principle of resemblance in the similarity of interests of the men who engage in them, and proceeds to explore the grounds for the underlying differences.

Occupations may be classified into five major groups on the basis of the interests of men in those occupations. It is possible that age, general intelligence, and femininity-masculinity are three of the five factors responsible for occupational interests. As men grow older their interests become more like the interests of men in certain occupations and less like those of men in other occupations. Scores in occupational interests are affected by age.

HEREIN is presented a classification of occupations on the basis of the similarities or dissimilarities of interests of men engaged in the occupations. Discussion follows as to the probable explanation of such a classification and the thesis is advanced that three of the probable five factors underlying such a classification are general intelligence, age (interest maturity)¹ and masculinity-femininity.

CLASSIFICATION OF OCCUPATIONS ON BASIS OF INTERESTS

Thurstone² has developed a statistical procedure by which only four

independent variables were shown to account for all the intercorrelations between the interests of 18 occupational groups.³ On this basis the 18 occupations could be classified into four groups, according to which variable contributed most to that particular occupation. This classification (Groups I to IV) is set forth in the eighth column of table 1. Subsequently the writer applied Thurstone's procedure to a table of intercorrelations between 24 occupations and obtained the classification of occupations

¹ Apparently Thurstone overlooked the fact that his procedure could be carried one step further, thereby demonstrating the existence of a fifth variable. By its use the average deviation of the sum of the squares of the loadings from 1.00 is reduced from .193 to .145. This fifth variable contributes a loading of .49 to personnel, .40 to C. P. A., .24 to teaching, .23 to chemistry, -.36 to medicine and -.47 to architecture, to mention only those above .20 and below -.20.

¹ E. K. Strong Jr. Interest Maturity. *Personnel Journal*, 1933, 12: 77-90.

² L. L. Thurstone. A Multiple Factor Study of Vocational Interests, *Personnel Journal*, vol. 10, no. 3, Oct. 1931, and "Multiple Factor Analysis," *Psychological Review*, vol. 38, no. 5, Sept. 1931.

TABLE 1

Classification of occupations on basis of interests. All calculations based on the records of 285 Stanford seniors

GROUP	OCCUPATIONS	AVERAGE OF CORRELATIONS BETWEEN OCCUPATIONS IN COLUMN ONE AND ALL OCCUPATIONS IN THE GROUP							THURSTONE'S INDEPENDENT VARIABLE UNDER WHICH OCCUPATION IS TO BE CLASSIFIED. BASED ON:		CORRELATION WITH INTEREST MATURITY	CORRELATION WITH GENERAL INTELLIGENCE
		I	IIa	IIb	IIIa	IIIb	IV	V	18 occupations	24 occupations		
I	Physicist	.78	-.24	-.80	.05	-.37	-.34	.02			-.26	.32
	Chemist	.75	-.41	-.83	.09	-.24	-.08	-.05	I	A	-.18	.30
	Mathematician	.70	-.07	-.75	.20	-.30	-.39	.17		A	-.07	.31
	Engineer	.67	-.45	-.63	-.16	-.29	.01	-.04	I	A	-.36	.21
	Physician	.67	.08	-.58	.13	-.39	-.55	-.01	I	A	-.12	.16
	Dentist	.67	-.32	-.57	.13	-.23	-.18	-.22			-.20	-.01
	Architect	.64	-.04	-.61	.12	-.10	-.41	-.07	I	A	-.05	.14
	Psychologist	.60	.02	-.79	.43	-.13	-.54	.12	I	A	.21	.37
	Farmer	.50	-.53	-.42	.00	-.19	.12	-.31	I	A	-.46	.03
IIa	Artist	.48	.41	-.40	.10	-.44	-.74	-.25	II	A	.08	.14
	Journalist	-.10	.81	.19	-.06	-.29	-.59	.33	II	C	.15	.07
	Lawyer	-.17	.76	.33	.00	.03	-.46	.48	II	C	.26	.07
IIb	Advertiser	-.38	.74	.50	-.23	-.21	-.40	.20	II	C	.11	.02
	Life ins. salesman	-.70	.30	.85	-.14	.26	.30	.04	IV	C	.20	-.35
IIIa	Real estate salesman	-.62	.39	.85	-.50	-.03	.23	.06	IV	C	-.10	-.27
	Minister	.01	.04	-.22	.78	.51	-.19	.13	III	D	.74	-.03
IIIb	Teacher	.21	-.23	-.41	.78	.59	.02	.06	III	B	.67	-.01
	Y.M.C.A. sec'y.	-.30	-.20	.21	.61	.75	.36	-.09	III	B	.68	-.22
	Personnel manager	-.33	-.27	.17	.34	.64	.51	.09	III	B	.55	-.16
	Y.M. phys. director	-.14	-.45	.01	.56	.62	.38	-.32		B	.38	-.26
	School supt.	-.22	.08	.08	.70	.61	.15	.25		B	.76	-.12
IV	Office worker	-.34	-.55	.25	.08	.49	.76	-.09		B	.17	-.31
	Accountant	-.13	.55	.06	-.02	.34	.71	.26			.10	-.17
	Pur. agent	-.08	-.43	.27	-.44	.03	.62	-.06	IV	B	-.26	-.25
	Vacuum cleaner-salesman	-.50	-.41	.50	.06	.53	.60	-.24		B	.16	-.36
V	C. P. A.	-.04	.34	.05	.09	-.02	.00		IV	C	.37	.13

(Groups A to D) given in the ninth column of this table. The two classifications agree in general, but differ considerably in the case of certain occupations. Group B in the latter case appears to be a rather queer combination, made up of Y.M.C.A. secretaries, personnel managers, office workers, and school men.

A better classification is secured by grouping occupations in such a way as to obtain the maximum average correlation between members of the group and the minimum average correlation with all other groups (see table 1). Correlations with interest maturity and the Thorndike Aptitude test were also taken into account in this classification. For example, the interests of artists correlate slightly higher with occupations in Group IIIa (.42) than Group I (.40), to which it is assigned. But correlations between the interests of artists and both interest maturity and general intelligence place it among the members of Group I rather than Group IIIa. The occupation of city school superintendent really falls just about midway between Group IIIa and IIIb. It was finally placed in the latter group because it had more nearly the correlational relations of Group IIIb to other groups than those of Group IIIa. A fifth group is provided for the certified public accountant, whose interests correlate very close to zero with all occupations except with those in Group II, and there the correlations average only .34 with the members of the group.

The grouping of occupations set forth in table 1 must not be considered as final. As data from additional occupations are secured, regroupings will result.

Relation of Interest Maturity to Occupational Interests

From the correlations⁴ between interest maturity and the interests of the 26 occupations in table 1, it appears that there is a high correlation between maturity and the occupations in Group IIIa (average of .71) and to a lesser degree with Group IIIb (average of .59) and Group V (average of .37). There is, on the other hand, a low negative correlation with Group I (average of -.14). Correlation with Groups IIa, IIb and IV fall in between, i.e., with average correlations of .17, .05, and .04 respectively. Interest maturity pertains, then, to changes in those interests that peculiarly characterize Group III, i.e., the interests of ministers, school men, school superintendents, Y.M.C.A. secretaries and personnel managers.

It might be argued that the relationships between interest maturity and occupational interests shown in table 1 are due to the fact that the interest maturity scale is based upon a sampling of 55-year old men who are primarily representatives of Occupational Group III. It is true that one-fourth of the 55-Year Age Group⁵ are composed of men from Group III and that their interests correlate .63 with interest maturity; but Group II is similarly represented and its interests correlate only .12. Still more out of harmony with this supposition are the facts that although Occupational Group I constitutes one third of the 55-Year Age Group, its interests correlate -.14 with

⁴ Correlations are based on the records of 285 Stanford seniors.

⁵ Given in detail in table 2 of article on "Interest Maturity," *op. cit.*

interest maturity; and that although Group V constitutes but two per cent of the 55-Year Age Group, its interests correlate .37 with interest maturity. The relationships shown in table 1 are not then to any noticeable degree the resultants of the peculiar constituency of the 55-Year Age Group. The rela-

from each of the five age groups have been scored for interest in 19 occupations. These blanks were so selected as to give approximately the same average interest maturity scores and standard deviations as reported for these five age groups.⁶ (The 15-year olds are all actually 15 years old; the

TABLE 2
Average Occupational Interest Scores at Ages 15, 25, 35, 45, and 55

OCCUPATIONAL INTEREST	AGE					1085 HIGH SCHOOL AVERAGE AGE, 16.1	860 COLLEGE AVERAGE AGE, 20.2
	15	25	35	45	55		
Chemist	-35	-61	19	32	0	-27	-20
Engineer	26	-56	34	62	61	26	-26
Physician	38	-91	12	24	34	-28	-100
Architect	4	-79	35	33	40	-11	-42
Psychologist	-172	-105	33	45	25	-150	-106
Farmer	104	-45	-70	-38	-67	64	-11
Artist	-81	-288	-133	-118	-76	-145	-220
Journalist	-60	-89	-9	-30	16	-104	-235
Lawyer	-44	-13	65	62	113	-53	-22
Advertiser	-145	-72	-5	-90	-50	-167	-97
Life insurance salesman	-82	-9	-68	-65	-22	-82	-73
Real estate salesman	-11	-9	-67	-81	-48	-175	-175
Minister	-286	-42	2	43	44	-233	-176
Teacher	-164	19	60	78	80	-119	40
Y.M.C.A. Secretary	-337	-21	-62	-26	-43	-252	-166
Personnel manager	-160	37	75	71	54	-97	-19
Purchasing agent	4	-2	-39	0	-4	49	24
Vacuum cleaner salesman	-127	-68	-187	-164	-193	-113	-134
Certified public accountant	-118	-27	22	46	67	-121	-88
Average	-87	-54	-14	-6	2	-91	-87
Interest maturity score	-370	366	531	584	633		

tionships must result from changes in interests from 15 to 55 years of age, changes that are largely in harmony with the interests of Occupational Group III.

In order to afford a better basis for interpreting the relationships expressed in table 1 between interest maturity and occupational interests, approximately fifty vocational interest blanks

25, 35, 45, and 55-year olds are of that age or one year older or younger than that age.) The averages of the occupational interest scores are given in table 2. Thus, 15-year old boys score -35 for interest in chemistry; 25-year old men score -61; 35-year olds, 19; 45-year olds, 32; and 55-year olds, 0.

⁶ Given in table 4 of article on "Interest Maturity," *op. cit.*

As an additional check upon the foregoing, the average occupational interest scores are given for 1086 high school boys and 860 college men. Nearly all of the former were from the 11th grade and average 16.1 years of age. The majority of the latter were from the freshman year in college, but a sufficient number of seniors are included to bring the average age up to 20.2 years. These two groups are superior in ability to men of their own age and presumably are superior in interest maturity also.

To facilitate comparison between the average occupational interest scores, they have all been reduced to the comparable basis of quartile scores in terms of the medians and quartiles of our criterion groups. They are presented in graph form in Figures 1 and 2. Certain relationships between age and occupational interest scores are apparent.

Interest in occupations belonging to Group I decreases from ages 15 to 25 and then increases up to approximately the 15-year level at 35 years, where it remains until 55 years. Interest in farming and psychology do not follow the general trend of other occupations in Group I, to which they belong. The average man's interest in farming decreases as he grows older; there is no rise from 25 to 35 as is typical of Group I. Interest in psychology behaves quite otherwise. Here there is noticeable an increase from 15 to 35 years, much more typical of Group III than of I. This may be explained in part by the fact that the interests of psychologists correlate .45 with Group IIIa.

Interest in the occupations of Group IIa shows a slight tendency to increase

with age, an increase of about one quartile from 15 to 55 years. There is little or no change with age in Group IIb.

The interests of Group IIIa and IIIb show unmistakable increases from 15 to 25 and more gradual increases from there on to 55 years of age. The interests of Group IV, however, decrease from age 16 on.

Interest in the occupation of certified public accountant (Group V) increases steadily from 15 up to age 55. The interests of this group do not correlate with Group IIIa (only .09) and, consequently, its increase of interest with age is not attributable, presumably, to the causes underlying the increase characteristic of that group.

Provisionally, at least, the correlations between interest maturity and occupational interests, given in table 1, may be pictured by the curves in figures 1 and 2, since there is good agreement between the relative slopes of the curves and the correlations between occupational interests and interest maturity.⁷ This is all the more significant, since the two sets of results were obtained from different subjects and by entirely different methods.

Conclusion. The interests of occupational Group I (excepting that of psychologist) are characteristically juvenile, while the interests of Groups IIIa, IIIb and V and of psychologists are characteristically of mature age. Interest maturity is affected far more by the latter groups than by Group I,

⁷ A rank order correlation of .95 was found between the correlations of occupational interests and interest maturity on the one hand and the differences in quartile scores at age 15 and age 55 on the other hand.

since there is greater change from age 15 to 55 in these groups than in Group I. This explains the high correlation between interest maturity and occupational interests of Groups IIIa, IIIb and V.

CAUSES OF OCCUPATIONAL INTERESTS

If there are only four, or five, independent variables underlying all occupational interests, it is extremely important to identify them. The writer is not ready to undertake this task, since no analysis has yet been made of many occupations which might quite well belong to new groups of occupations and, because of their presence, lead to the identification of additional independent variables. It is conceivable that occupations such as acting, or the skilled trades, may not belong to any of our present five groups. It seems more appropriate to continue our exploration of occupations until it is apparent that no further groups of occupations will emerge.

Thurstone's technique is not so helpful in this connection as would appear from his two articles. A comparison of his variables as listed in those articles with the variables obtained when the correlations between 24 occupations are employed indicates that the two sets of variables so obtained are not comparable. For example, the five variables to be obtained from 18 occupations correlate with those from 24 occupations as follows: .99, -.71, -.08, -.73 and .28, respectively. But the variables can be matched with one another so as to give positive correlations between each of the five pairs (see table 3).

Reference to table 1 will disclose the

relationships which exist between the five variables based on 18 occupations (I to V), the five variables based on 24 occupations (A to E), and our classification of occupations. To aid in such comparisons, the data have been rearranged and presented in table 3. Evidently the first variable obtained from correlations based on either 24 or 18 occupations is the same (correlation of .99) and these two pertain to our Occupational Group I. The second variable (B) obtained from 24 occupations is related to Thurstone's variable IV, "business," (correlation of .59), etc. It is evident, then, that variables obtained by Thurstone's procedure are not stable entities, but fluctuate according to the occupations that are included in the calculations. At the same time the variables have undoubtedly sufficient meaning to warrant their careful consideration.

The question naturally arises as to what these variables could be. With this thought in mind the rank order correlations between the loadings of each variable assigned to occupations and the relation between interest maturity and occupational interest indicate that Thurstone's variables II, III and V are about evenly related to interest maturity (correlations about .50).⁸ No one of his five variables is comparable, then, with interest maturity. But when the five variables secured from 24 occupations are similarly considered, it appears that the

⁸ Loadings from variable I "science" correlate -.44 with the correlation between interest maturity and occupational interest; loadings from variable II "language" correlate similarly, .50; variable III "people," similarly, .57; variable IV, -.32 and variable V, .46.

fourth variable (D) is rather closely related to interest maturity (correlation of .83, see table 3); and the second and third variables (B and C) correlate about .47 with it. Is this fourth variable to be identified with interest maturity? If variables were determined upon the basis of intercorrelations between 50 occupations, would a variable emerge that would correlate still more highly with interest maturity?

Similarly, when the same procedure is followed with reference to general

variable E correlates .42, variables C and D correlate about zero and variable B correlates $-.66$. Do these correlations mean that variable A is essentially an expression of general intelligence, or that it just happens that the occupations which receive high loadings of variable A have interests which correlate with general intelligence?

One other factor seemingly is of significance in this connection. This is masculinity-femininity. Dr. H. D.

TABLE 3
Relationships between three groupings of occupations

5 VARIABLES OBTAINED BY THURSTONE'S PROCEDURE, BASED UPON:		CORRELATION BETWEEN VARIABLE A AND I, B AND IV, ETC.	OUR GROUPING OF OCCUPATIONS, ARRANGED TO AGREE BEST WITH VARIABLES A TO E	CORRELATION OF VARIABLES A TO E WITH:		
24 occupations	18 occupations, arranged to agree best with variables A to E			Interest maturity	General intelligence*	Femininity-masculinity
A	I "science"	.99	Group I (table 1)	-.37	.91	-.53
B	IV "business"	.59	IIIb, IV, teaching of IIIa	.40	-.66	-.12
C	II "language"	.84	IIa, IIb, V	.55	-.07	.86
D	III "people"	.30	Ministry of IIIa	.83	.04	.59
E	V ?	.28	?	.04	.42	.20

* If the Iowa High School Content Examination is used here instead of the Thorndike Aptitude Test, the correlations are respectively .83, $-.73$, .06, .17, and .48. If the Terman Group Test is used, the correlations are: .59, .20, $-.14$, .48 and .18.

intelligence,⁹ instead of interest maturity, it appears that variable A correlates .91 with general intelligence,

⁹ These correlations correlate .96 with coefficients reported by K. W. Shlauderman (unpublished) but only .46 with similar correlations given by H. D. Carter, *Twin Similarities in Occupational Interests*, *Journal of Educational Psychology*, vol. XXIII, no. 9, 1932. Shlauderman's measure of general intelligence is the Iowa High School Content Examination, upon 137 junior college students; Carter's measure is the Terman Group Test, upon 70 boys, most of whom were in high school.

Carter and the writer have presented in another article¹⁰ our findings relative to how boys and girls differ in their occupational interests. Boys score higher in nine occupations and girls score higher in fourteen occupations. Sixteen of the 23 differences are statistically significant. If the rank-order for femininity-masculinity of these 23 occupations is correlated with the loadings of Thurstone's five factors

¹⁰ "Sex Differences in the Occupational Interests of High School Students." *Personnel Journal*, 1933, 12: 166-175.

A to E, the correlations are obtained which are given at the extreme right of table 3. Is Factor C to be identified with femininity—masculinity since in this case the correlation between the two is .86?

Factor D which correlates .83 with interest maturity also correlates .59 with femininity—masculinity. This relatively high correlation is to be expected since there is a correlation of .73 between interest maturity and femininity—masculinity. Hence, in general, occupations in which older men score higher than younger men, are the occupations in which girls score higher than boys, and *vice versa*.

Conclusion. Of the five variables A to E, A is apparently related to general intelligence (correlation of .91), C is related to femininity—masculinity (correlation of .86) and D is related to interest maturity (correlation of .83). What may factors B and E represent?

Application to Vocational Guidance

Since the norms for occupational interests are based on adult men, youths are penalized thereby when their interests are measured by the occupational scales. These penalties are roughly expressed by the averages of all the occupational interest scores, given in the next to the last line of table 2. The average of the quartiles for these 24 occupational scales is 97.1. Hence, on this basis, boys of 15 will average .9 quartile (87/97.1) below what they presumably would if they were about 40 years of age. Similarly the penalty for 25-year olds is .56 quartile; for 35-year olds, .14 quartile; and for 45-year olds, .06 quartile. These penalties are less than those given

previously,¹¹ where change of interests between 25 and 55 years of age was reported, based upon only eight occupational groups. These eight have at least one-third more change in interest scores between 25 and 55 years than the 19 occupations included in table 2. This difference accounts in the main for the two different findings.

It is, however, apparent from figures 1 and 2 that change of interest in the various occupational scales is not equal. There is only a slight increase in scores in the occupations of Group IIa and very pronounced increase in the scores of occupations in Group IIIa. From these two figures it is possible to estimate fairly well how a boy's score in a particular occupation will increase or decrease as he grows older. Such estimates are: first, scores in interest of life insurance salesmen remain unchanged. Second, scores in interest of farmers, purchasing agents and vacuum cleaner salesmen will decline 0.5 to 1.0 quartile. Third, scores in interest of engineers, physicians, chemists, architects, artists, journalists, lawyers, advertisers, real estate salesmen, and Y. M. C. A. secretaries will increase 0.5 to 1.0 quartile. Fourth, scores in interest of psychologists, teachers, ministers, personnel managers, and certified public accountants will increase 1.0 to 2.0 quartiles.

It must be recognized in this connection, however, that these estimates apply only to average scores of a group. We are not prepared to say whether such changes in scores with increasing maturity are equally characteristic of those scoring high and low. If only those scoring low increase their scores,

¹¹ E. K. Strong, Jr., *Change of Interests with Age*, 1931, p. 173.

the change has no significance, for their scores would still remain so low as to be rated C¹² on the vocational interest test. But if the changes are largely

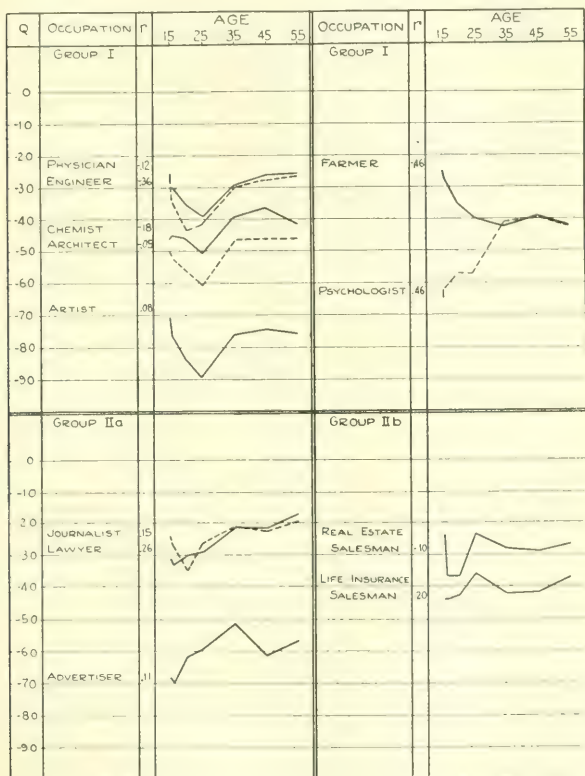


FIG. 1. OCCUPATIONAL INTEREST SCORES AT AGES 15, 16, 20, 25, 35, 45 AND 55

Scores are expressed in terms of quartile deviations from the median of criterion groups to make them more nearly comparable.

¹² An A rating is assigned to scores above the -1.0 quartile of the criterion group; a C rating to scores below the -3.5 quartile, and a B rating to scores between these two critical scores. With adults there seems to be no significant difference between a high or low A rating, or a high or low C rating, as

far as achievement in the occupation is concerned. In the light of these findings a very high C rating may possibly prove to have some significance with college and, particularly, high school students since it may prove indicative of a B rating at a later date.

due to those with already high scores occupational interest scores, as shown scoring still higher, then the changes in figures 1 and 2, represents the

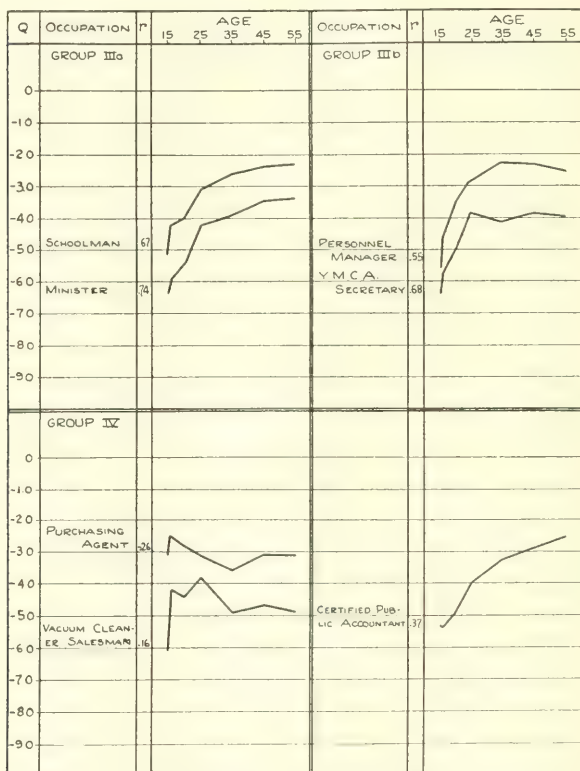


FIG. 2. CONTINUATION OF FIGURE 1

would be very significant in many cases, causing some C ratings to become B and some B ratings to become A.

The general level of the average

relative frequency¹³ of men with such interests. Definition of the named

¹³ Frequency must be interpreted here in terms of the samplings used for the various age levels, previously described.

occupation, however, must be stated in terms of the criterion group,¹⁴ and not as the term is generally employed. For example, according to these findings, the average man at any age between 15 and 55 years rates a very low C in the interests of an artist (-6.6 Q to -9.0 Q) and advertiser (-5.2 Q to -7.0 Q). On the other hand, he rates B+ to B- in the interests of a

in *Who's Who*) and advertising men holding positions at the top of their profession (account executives of advertising agencies); while the sampling of the last two represents the entire group.

In order to give a better appreciation of what these various levels of plotted average scores in figures 1 and 2 mean, the average scores are ex-

TABLE 4

*Average occupational interest scores for various ages expressed in ratings
Ratings not given are all C ratings*

OCCUPATION	RATING OBTAINED AT AGE						
	15	16	20	25	35	45	55
Engineer.....	B-	B-			B	B	B
Physician.....	B	B-			B	B	B
Farmer.....	B	B					
Lawyer.....	B-	B-	B	B	B	B	B+
Journalist*.....	B	B-		B-	B	B	B+
Real estate salesman.....	B			B	B	B	B
School man.....				B-	B	B	B
Minister.....						B-	B-
Personnel manager.....				B	B	B	B
Purchasing agent.....	B-	B	B	B-	B-	B-	B-
Certified public accountant†.....				B-	B-	B	B

* Critical score between B and B- is -2.5 Q instead of -3.0 Q; critical score between B- and C is -3.0 Q instead of -3.5 Q.

† Critical score between B- and C is -4.0 Q instead of -3.5 Q.

lawyer (-1.7 Q to -3.4 Q) and purchasing agent (-1.7 Q to -3.5 Q). If the samplings of these four occupations were equivalent, we might conclude that there were many more men with the interests of the last two occupations than of the first two. But the sampling of the first two represent artists of national reputation (listed

pressed in terms of ratings in table 4. Here it appears that an average male at 15 years of age obtains a rating of B- in engineering interest; at 16 he obtains a similar rating; at 20 and 25, a rating of C; and at 35, 45 and 55, a rating of B. This table, covering all ratings above C for the nineteen occupations in figures 1 and 2, obtained by the average man between 15 and 55 years of age, should be helpful in interpreting vocational interest scores.

¹⁴ See *Manual for the Vocational Interest Test*, published by Stanford University Press, January 1933.

Ratings of B or B- in the interests of journalists and purchasing agents, for example, among boys between 15 and 25 years of age are to be considered typical. Similar ratings in the interests of artists, school men, ministers, certified public accountants, etc., will seldom appear and are therefore far more significant when they occur.

SIGNIFICANCE OF INTEREST MATURITY

Interest maturity is a measure of the degree to which one has the interests of 55-year old men in contrast to those of 15-year old boys. Since the sampling of our 55 year old men is not representative of the general population but rather of successful men of superior education found in the professions and certain business activities, it must be recognized that interest maturity as here used measures progress in interests from those of the typical 15-year old boy toward those of our particular sampling of 55-year old men.

As is shown in figures 1 and 2, the interests of men, as they advance in years, do not change particularly with regard to certain occupations. It is natural, then, that interest maturity should reflect the interests of those occupations in which there is noticeable a change between 15 and 55 years. Such occupational interests are those of ministers, Y. M. C. A. secretaries, school men, personnel managers, and, to a lesser degree, psychologists, certified public accountants, journalists and lawyers.

It is suggested that the factor common to all such occupations is serving others for their presumed good. This

characterization fits the first four: the C. P. A. and lawyer devote their time to serving their clients; possibly an equally good defense can be made also for psychologists, who are nearly all instructors, and for journalists. It is suggested furthermore that the noticeable increase in interest maturity and the interests peculiar to these occupations from 15 to 55 years is due to the development of the "parental instinct," particularly in its more socialized expression.

Granted the above, it would appear that the 15-year old boy has already established to a large degree all the basic interests he will ever have except those which are expressions of taking care of his children. His greatest development as far as interests are concerned during the next ten to fifteen years is in the direction of caring for and sympathizing with the young, the weak and the helpless.

SUMMARY

1. Occupations may be classified into five major groups, on the basis of the interests of men in those occupations.

2. It is possible that age, general intelligence, and femininity—masculinity are three of the five primary factors responsible for occupational interests.

3. As men advance in years their interests become more similar to the interests of men in certain occupations and less similar to those of men in other occupations. It is accordingly possible to rank occupations in order of their juvenile—adult interests.

4. Scores in occupational interests are affected by the age of the individuals. Boys 15 years of age will average .90 quartile below what they presumably would score at 50 years of age. Similarly men at 25 years of age are penalized .56 quartile; at 35 years,

.14 quartile; at 45 years, .06 quartile. These penalties refer to occupational scores in general. Reference to figures 1 and 2 makes clear that in some cases occupational scores decrease with age and in other cases they increase, sometimes noticeably.

The Humm-Wadsworth Temperament Scale

Preliminary Report

BY DONCASTER G. HUMM AND GUY W. WADSWORTH, JR., *Los Angeles*

An inventory of preferences and attitudes which accurately reveals temperamental characteristics is greatly needed, both in personnel practice and in psychological research. This contribution makes progress toward such a goal.

The standardization of a new scale for the analysis of temperament is described. Based upon Rosanoff's theory of personality, this scale is designed to reveal seven basic components of temperament, and the degree to which each is present in a given individual. Analysis indicates that certain components measured by the scale are of more value in some lines of work than in others.

THE object of our temperament scale is to analyze temperamental mechanisms which underlie the characteristic reactions of a person to his environment and to other people. Whereas students of intelligence seek to measure ability to weigh facts and to grasp relationships, our study is concerned with the effect upon behavior of emotionality, self-interest, harmony or disharmony with environment, and similar factors.

The need for temperament analysis became evident in the course of personnel work, in which the measurement of intelligence and of aptitudes, while valuable, did not provide wholly adequate data in cases of problem employees.

In reviewing various methods of studying temperament or personality, it appeared that the subject had been approached from two general points of

view: (1) type theories, and (2) efforts at quantitative presentation of special traits or groups of traits. Procedures seeking to delimit types of temperament did not seem, upon application, to meet desirable standards of objectivity and validity. Treatment of special traits, such as introversion-extroversion, ascendance-submission, self-sufficiency, etc., did not appear to afford a sufficient sampling of traits to provide an inclusive analysis of temperament.

Solution of the temperamental problems encountered in our work appeared to present three requirements. First was that of securing acceptable criteria for temperamental analysis. The temperamental constitution of a given individual should be presented in qualitative terms which are recognizable, and which can be confirmed by experts. The second requirement was that of

dealing with temperamental mechanisms which may be presented quantitatively, and interpreted in terms of favorable or unfavorable implications. Assuming, for example, that emotionality and allied characteristics are found to predominate in the temperamental make-up of a person, does such predominance suggest a problem, or has a valuable asset been discovered? How much emotionality may be regarded as insufficient, or excessive, or as most desirable? The third requirement was that of securing a sufficiently complete analysis of temperament to reveal inter-relationships. The significance of given temperamental predispositions, even when ascertained acceptably from both the qualitative and quantitative angles, may be expected to vary, depending upon the characteristics of the entire temperamental organization. One subject with tremendous emotional drive may apparently be well adjusted and highly successful; another similarly constituted in this respect may be an emotional psychopath. What factor, or factors, preserve integration in the one, account for its absence in the other?

As best suited to meet our requirements, we selected the Rosanoff theory of personality (or temperament) as the basis of study.¹ Rosanoff's theory is based upon psychiatric experience. He provides observations of characteristic habits of thought and modes of behavior which distinguish patients suffering from certain constitutional mental and nervous disorders. He adds the concept of a positive element

in temperamental constitution, the presence or absence of which would seem to determine the integrity of mental organization, or lack of it.

Application of a psychiatric theory in temperamental research may suggest that we are dealing with tendencies which are essentially psychotic or abnormal. Such a conclusion may be misleading. While we cannot review here the current concepts of normality versus abnormality, we can point out that the manifestations observed in certain psychotic disturbances are regarded merely as extremes in behavior, arising from the same basic temperamental equipment with which thoroughly normal individuals are endowed. The essence of normality appears to be that of a balanced condition which promotes controlled utilization of temperamental mechanisms. In abnormality, certain traits or predispositions are "out of hand"; stated otherwise, the positive influences which normally maintain temperamental balance have "given way." The underlying temperamental structure can then be observed in exaggeration.

Applied to our problem, the psychiatric approach meets the requirement of recognizable criteria. It provides observations of experts accustomed to dealing with temperamental anomalies, and capable of recognizing on a qualitative basis, the combinations of traits which characterize temperamental imbalance. The quantitative aspect is a matter of measurement, psychotic material providing one extreme, and unselected cases from the general population giving general distribution. On the

¹ A. J. Rosanoff. *Manual of Psychiatry*, 6th Ed. ch. XVI.

point of inter-relationships, a sufficient number of temperamental combinations may be reviewed and presented in comparison to afford a sampling of traits and predispositions which is reasonably inclusive.

The Rosanoff theory may be briefly outlined. Each group of traits dealt with is regarded as a *component* of temperament, and is presumed to be present in some degree in every individual. *Analysis* of temperament requires measurement of each component. *Diagnosis* consists of identifying the component which appears to predominate or to be emphasized in the temperamental make-up of a given subject.

The components are listed below with the symbols used to identify them in the temperament scale under report, and with the constitutional mental or nervous disorder in which an extreme degree of each is typically observed in the tabulation.

wheel," the normal component presents mainly characteristics associated with restraint, and persons in whom it is over-accentuated may be given to indiscriminating conservatism. In diagnosis, the term "normal" is rarely used alone except for such ultra-conservatives. It is usually used in combinations such as "normal-cycloid," "normal-schizoid," etc., where it refers to individuals whose temperament is under control, and who are essentially well adjusted, but who also show a large degree of cycloid or schizoid temperament.

2. An individual with an excess of *Hysteroid Component* possesses a character defect with ethically inferior motivation, manifested by malingering, stealing, lying, cheating and similar anti-social behavior. A moderate degree of hysteroid tendency underlies much of our prudence, shrewdness and diplomacy, and may even contribute to social adjustment, since the

COMPONENT	SYMBOL	DISORDER IN WHICH OBSERVED
1. "Normal"	N	
2. Hysteroid (or anti-social)	H	Hysteria, criminalism
3. { a. Manic phase	Cm	Manic depressive psychoses
4. Cycloid { b. Depressed phase	Cd	Involutional melancholia
5. { a. Autistic phase	Sa	Dementia praecox
6. Schizoid { b. Paranoid phase	Sp	Paranoic conditions
7. Epileptoid	E	Mental disorders allied with epilepsy

1. The *Normal Component* is primarily a control mechanism, providing rational balance and temperamental equilibrium. It underlies the conservatism, toleration and conformity to socially acceptable behavior observed in the well adjusted subject. Essentially a "brake" or "balance

ends of self interest are often best served by conformity to socially acceptable conduct.

3. The *Cycloid Component* is characterized by emotionality, fluctuations in activity, and interferences with voluntary attention. The manic phase is manifested by some degree of elation,

pressure of activity and distractibility, together with such manifestations of excitement as jests, pranks, enthusiasms, impatience, etc. The depressed phase is manifested by some degree of sadness, lessened activity, dearth of ideas, and associated characteristics such as worry, timidity, feelings of malaise, and the like. The manifestations of a general cycloid nature are fluctuations from emotional equilibrium, hot-headedness, difficulty in sleeping, etc. Cycloid subjects are enterprising, sensitive to social situations, versatile and sympathetic. They are handicapped by such tendencies as emotional thinking, lack of persistence, changeability of mood.

4. The *Schizoid Component* is characterized by heightened imagination. It leads to a tendency toward a day-dream life, concerning which the subject is sensitive. The autistic manifestations are seclusiveness, shyness, suggestibility and the like, accompanied by an ability to visualize and to concentrate upon special tasks, excluding diverting interests. The paranoid manifestations include stubborn adherence to fixed ideas, conceit, suspicion and contempt for the opinions of others, with behavior fitting these traits. In the presence of sufficient normal component, the paranoid phase is of value in pushing through programs which meet with resistance.

5. The *Epileptoid Component* is characterized by inspirations to achievement which are meticulously developed and pushed through to completion. It causes the subject to spend endless time in working out projects, and yet, at times, to appear

inconsistent because of some contradictory inspiration. The inspirational tendency is often of a religious nature. The temper manifestations are explosive, often occurring on slight provocation, after long periods of endurance. Some physiological symptoms associated with epilepsy, as well as epilepsy itself, are likely to be present or to appear in the history.

The procedure followed in preparing the Temperament Scale was as follows: (1) the preparation of questions, using psychiatric sources; (2) the trial of these questions on subjects known to have the given component, subjects known to be free from the component, and subjects having other components. The preliminary form described here contained 9 multiple choice questions and 255 true-false questions.

An example of the multiple choice type of item follows:

Which are you most likely to fear?

-1. Ridicule
-2. Responsibility thrust upon you
-3. Failure in a project
-4. Consequences of a mistake

Here are a few true-false questions:

- Is it rare for you to be absolutely sold on an idea? . . . Yes No
- Is a disappointment more likely to make you angry than sad? Yes No
- Do you ever wear yourself out by undertaking too much? . Yes No

In evaluating the questions, a response which was in agreement with the observed presence of a component in the subject was scored plus; a response in disagreement was scored zero. When a response showed the presence of a component which had not been observed, it was scored minus.

Before considering distribution of the scores, the meaning of zero scores should be clarified. For most of the questions the plus scores greatly exceeded zero scores. In a few cases zero scores equalled or exceeded plus scores. This happened because an individual may have some of the traits of a component without having all of them. For example, only 23 per cent of schizoid-autistic subjects (Sa) admitted to sensitiveness in the degree which made them give up friends who made fun of them. This left 77 per cent of such subjects who did not admit this (plus score 23, zero score 77). Yet none but schizoid-autistics admitted to this trait at all. It is evident that the question covering this point was differential, despite the high zero score. It was thought advisable, therefore, not to count the zero scores in the statistical evaluation.

The statistical analysis of the plus and minus values is presented in tables 1a and 1b. From these findings, it is evident that the curve of minus scores is skewed in a positive manner and is decidedly J-shaped, with the mode closer to zero than the mean, while the curve of plus scores approaches the normal curve with but a slight negative skew.

For our purposes this is as it should be. It is quite evident that the questions as a whole have a high differential value, inasmuch as the difference between the two means is many times the standard deviation of the difference.

Each question was evaluated by statistical method to determine the extent to which it was differential. Questions which did not show the presence or absence of a trait were

discarded. The remaining questions were assigned successive baseline values, 1 indicating a value between the 25th and 50th percentile, 2 a value between the median and plus one quartile distance, 3 a value between plus one quartile distance and plus two quartile distances, etc., the final value being 6.

These questions were arranged according to the component each represented. A distribution of scores made

TABLE 1a
Statistical analysis of plus values

Mean.....	45.5% \pm 1.1
Median.....	48.5
Standard deviation.....	19.3
Probable error.....	13.1
Coefficient of skew $\left(\frac{Mn - Md}{PEmn} \right)$	-2.82

TABLE 1b
Statistical analysis of minus values

Mean.....	21.9 \pm 2.4
Median.....	14.6
Standard deviation.....	22.2
Probable error.....	15.0
Coefficient of skew.....	-30.4

in each component by subjects whose mental examinations evidenced a strong degree of that component was compared with a contrasting distribution of scores made by subjects in whom the component was found to be weak or virtually absent. For example, in the case of the normal component, scores of normal subjects were compared with those of abnormal subjects; for the hysteroid component, the distribution of scores made by

subjects with a strong degree or excess of hysteroid component was contrasted with the distribution of scores made by subjects weak in that component, and so on. These distributions are compared in table 2a, and the critical measure for each component is indicated.

In order to permit a ready comparison of the weight of the various components in a given individual, a baseline measure was selected, with zero falling at five quartile distances below

result is a graphic representation of the relative degree of each component in his temperamental make-up, as compared with the degree of such component observed in subjects known to be characterized mainly by it. For example, if a subject's normal score falls at 50 on line "N" of his profile chart, he has that component to the degree that the average normal subject has it. If his hysteroid score falls at 30 on line "H," he has a hysteroid component in a degree equivalent to

TABLE 2a
Critical measures of the various components

COMPONENT	MEASURES OF THOSE POSSESSING COMPONENT				MEASURES OF THOSE NOT POSSESSING COMPONENT				PE(diff.)	CRITICAL POINT
	Med.	Q	PE (md)	Skew*	Med.	Q	PE (md)	Skew*		
Normal	46.3	2.9	.42	-.30	25.6	6.1	.91	-.06	1.00	39.5
Hysteroid	34.0	6.0	1.25	+.23	16.3	5.6	.68	+.02	1.42	24.0
Cycloid manic	56.8	6.9	1.15	-.07	36.3	7.7	1.06	-.07	1.56	24.1
Cycloid depressed	24.5	3.2	.64	+.27	12.4	4.0	.50	+.03	1.30	19.5
Schizoid autistic	87.2	10.4	1.52	+.11	48.5	10.0	2.18	+.29	2.66	70.5
Schizoid paranoid	32.6	3.8	.46	+.39	23.9	2.9	.63	-.28	.08	29.5
Epileptoid	27.8	3.2	.62	+.25	15.2	4.0	.50	+.06	.08	24.5

$$* \text{ Skew: } j = \frac{Q_3 + Q_1 - 2 \text{ Md}}{Q_3 - Q_1}$$

the median, 50 at the median, and 100 at five quartile distances above the median. This serves in table 2a to cause the median uniformly to fall at 50, minus one quartile distance at 40, minus two quartile distances at 30, etc.

A subject taking the temperament scale receives seven scores, one for each of the components under consideration. His score for the Normal questions is entered on the vertical line "N" of his profile; for Hysteroid questions on line "H"; for Cycloid-Manic on line "Cm," etc. The final

two quartile distances below the mean of hysteroid subjects, etc.

The question of the significance of these scores in analyzing temperaments must be answered by determining critical points for each component, scores above such points indicating that the subject possesses the component in a significant degree, while scores below such points indicate the presence of the component in insignificant degree. These critical points were determined by finding the point of intersection between the distribution of the plus scores and the distribu-

tion of the minus scores of each component, and by determining the probable error for this point. For this purpose the probable error of the difference between plus and minus scores, expressed in baseline measures, was used. Three times this probable error was taken as a measure of relative certainty.

These probable errors and the critical points are shown in table 2b. From this table we see that a subject whose normal score is more than 10.4 points above 31, that is, above 41.4, is quite certainly normal, and one

in accuracy the diagnoses, but we have reason to believe that such analyses possess a rather high degree of validity.

In application the temperament scale has been found prognostic of the behavior of employees, and it has become evident that certain components discovered by it are of more value in certain lines of work than in others. In general, people with high "normal" component adjust well on the job; those with low "normal" component frequently are listed among "problem employees." A high degree of "normal" component seems to act as a

TABLE 2b
Significant differences in each component expressed in baseline measures

COMPONENT	PE DIFF.	3(PE DIFF.)	CRITICAL POINT AND BORDERLINE ZONE
Normal.....	3.45	10.4	31.0 \pm 10.4
Hysteroid.....	2.37	7.1	36.0 \pm 7.1
Cycloid manic.....	2.26	6.8	39.5 \pm 6.8
Cycloid depressed.....	2.21	6.6	37.0 \pm 6.6
Schizoid autistic.....	2.56	7.7	32.0 \pm 7.7
Schizoid paranoid.....	0.21	0.6	37.5 \pm 0.6
Epileptoid.....	0.25	0.8	37.5 \pm 0.8
Average.....	1.90	5.7	

whose normal score is more than 10.4 points below 31, or below 20.6, is quite certainly psychopathic. Between these points we have some degree of uncertainty.

We found marked agreement between the diagnoses arrived at by our test and by psychiatric examinations. In the 119 cases used in the validation of the preliminary form of the temperament scale, the high point revealed by the test agreed in every case with the diagnosis made in the mental examination. We are not yet in a position to say whether the analyses of temperament made by the test approach

check upon the disabling features of other components and permit their manifestations within the limits in which they may represent actual assets. Subjects in whom the "normal" alone is accentuated are likely to be dull and uninteresting as individuals, but valuable where conservatism is an asset.

"Normal-hysteroid" people are often personally successful. The "normal" seems to enable them to adjust socially; while the "hysteroid," with its emphasis upon self-interest, seems to keep the subject concentrated upon his own advancement.

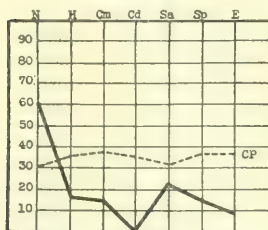
"Normal-cycloid" subjects do well

where ability to meet the public is an asset or where an ability rapidly to shift the attention is needed, in such jobs as salesmanship, truck driving, general supervising, etc. They are

required. They do well as book-keepers, watchmen, research workers, etc. They do not meet the public well.

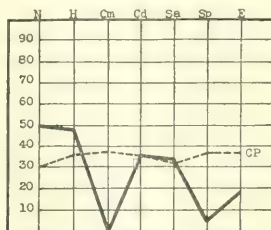
"Normal-paranoid" subjects succeed in work which involves devotion

NORMAL SUBJECT



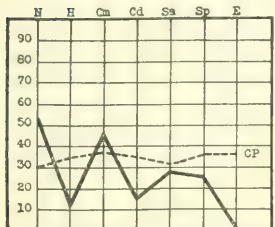
This subject is a very conservative placid woman; does not at all give way to her feelings, indulge in day dreams, etc.

NORMAL-HYSTEROID SUBJECT



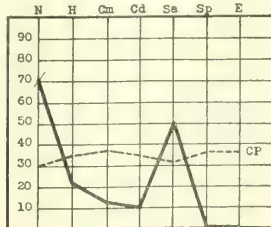
This subject admits being self-centered. He is successful and well adjusted; also shy and easily depressed.

NORMAL-CYCLOID SUBJECT



This subject is happy-go-lucky, loves excitement, a good mixer; nearly always on the go, seldom sad.

NORMAL-AUTISTIC SUBJECT



This subject is a very efficient secretary; is unobtrusive, shy, sensitive; limits herself to a few intimate friends.

PLATE I

often handicapped, however, by fluctuations of mood and activity, and by emotional thinking and snap judgments attending such thinking.

"Normal-autistic" subjects perform well on routine jobs and on jobs where long periods of isolated application are

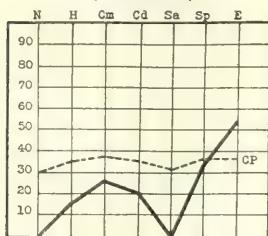
to a cause. They make excellent lawyers, leaders of movements, etc. They relish contention, sometimes even for its own sake. They are often handicapped by the readiness with which they make enemies.

"Normal-epileptoid" subjects do

well in pushing through projects. Their devotion is more likely to be to an accomplishment than to a cause. They will work, when let alone, for

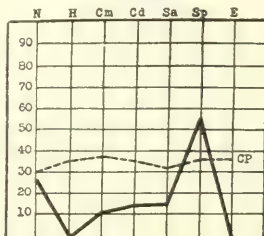
requiring unusually careful attention to detail. They are sometimes likely to waste time in assiduous devotion to a relatively useless hobby.

EPILEPTIC SUBJECT
(DETERIORATED)



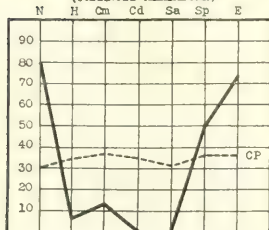
This subject is an inmate of the state hospital for the insane; has frequent seizures, shows deterioration.

PARANOID SUBJECT
(PSYCHOTIC)



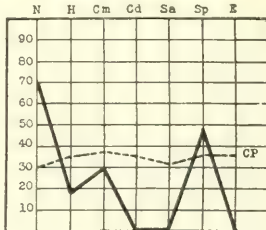
This subject is shortly to be placed in a state hospital due to delusions of persecution.

NORMAL EPILEPTOID SUBJECT
(PARANOID ADMIXTURE)



This subject is a research scientist, very meticulous in his work, also inclined to hold very strong opinions.

NORMAL PARANOID SUBJECT



This subject is a very efficient clerical worker, very controlled, tends to strong opinions but has insight on this point.

PLATE 2

long periods on a job, finishing it with meticulous zeal. They do well as foremen and superintendents of construction or on any job which requires pushing things through to completion. They also do well in skilled trades

It is not our purpose to discuss here abnormal subjects, since they have no fitting place in an industrial organization. It may be said in passing, however, that the temperament scale has been of service in helping to discover

them, and in identifying the characteristics of the disablement.

Test scores are put in the form of profiles, in order to facilitate examination. Some sample profiles are reproduced to illustrate the method of interpretation. The symbols enumerated in the description of the components have been placed at the head of the vertical lines, the latter divided in intervals from 1 to 100. Each of the ten points on these lines is equivalent to one quartile distance. The median of subjects who possess a given component to an extreme degree falls in each case at 50. The dotted line, labelled "CP," marks the critical points, determined for each component as already described.

All the subjects whose profiles are shown in Plate I are efficient workers. These profiles were selected to illustrate the differences which appear in well-adjusted individuals, all of whom may be classified as normal.

Plate II presents profiles showing strong contrasts between normal and abnormal subjects. The "Epileptic

Subject" was selected from hospital cases to illustrate how a low "normal" score seems to account for failure to make an adjustment; while the "Normal-Epileptoid Subject" was selected to show how a high "normal" component makes possible, with even a higher epileptoid score, successful social adjustment. The two paranoid subjects present a similar contrast. The psychotic subject had to be dismissed for threatening his foreman because of a fancied grievance, while the "Normal-Paranoid Subject" is an efficient worker.

While the first form of the temperament scale used in the research affords a measure of temperament which shows valid differences distributed in approximate agreement with the normal curve, certain components were not covered as adequately as might be desired. In order to secure a more completely balanced set of questions, a second form, including all validated questions and some two hundred new ones, is being subjected to research.

Otto Lipmann—Psychologist

By FRANZISKA BAUMGARTEN, *University of Berne, Switzerland*

TRANSLATED BY SOLOMON DIAMOND

This appreciation of the life of Otto Lipmann has been written by a colleague who knew well his outstanding contributions to the scientific study of men at work.

DR. OTTO LIPMANN, one of the most important psychologists of our time and a scientist of international reputation, died unexpectedly of heart failure on October 7, in Berlin. He was in his fifty-third year.

Coming from a wealthy family, Lipmann was able to work as a private scholar, instead of entering upon the academic career which stood open to him. Only after the war,—during which he served on the Eastern front—and in consequence of the inflation which robbed him of all his means, did it become necessary for him to accept a university position. Scarcely a year ago he was called by the University of Berlin to teach applied psychology, an appointment from which he was given “leave” last spring. The Institute for Applied Psychology in Berlin, which contains the richest collection of psychological material that has yet been made, was established by Lipmann in 1906 independently of academic auspices, and led by him until his death.

At the time when Lipmann completed his University studies in 1904, only very timid efforts were being made to apply psychology to other

sciences and to practical affairs. In France, Binet had made his first intelligence tests on children; and at the University of Breslau, where Lipmann received his degree, his famous teacher Hermann Ebbinghaus was busily working out new methods of testing memory.

Lipmann seized upon this idea, and his first scientific work dealt with “Practical Results of Experimental Investigations of Memory” (1903). The application of psychology was the central idea of his scientific work for three decades. At one time he devoted himself to the so-called “*Tatbestand-diagnostik*,” to psychological methods of proving an individual’s participation in an act, as supplementary to circumstantial evidence and the testimony of witnesses. His researches on testimony, his combination experiments, and above all his well-known work “The Traces of Affectively Toned Experiences and Their Symptoms,” have made Lipmann one of the founders of this branch of science. His “Outline of Psychology for Jurists,” a pioneer work in this field, appeared in 1908 as a by-product of his activity in problems of forensic psychology. Soon afterwards, he entered on another

problem, that of Psychography, the comprehension of the personality through the representation of separate psychological traits. Together with Baade and W. Stern, Lipmann published the well-known "Fragment of a Psychographical Schema" (1909), which has remained as the foundation of numerous efforts in the same direction.

His book on "Mental Sex Differences" (1911), in which he considered the entire literature of the subject, in order to determine whether mental differences between the sexes could be experimentally detected, will also have lasting value as a sourcebook. This work spread Lipmann's name among advocates of women's rights, for he came to the conclusion that there is no single mental characteristic which is to be found exclusively in one sex or the other, and that the mental traits common to both sexes show no differences in degree, or at least that these differences are much smaller than is ordinarily supposed. At the same time he set up a law of "intervariation" of the sexes. This law maintains that men are more variable than women; they are more often found at the extremes. Thus we find more idiots as well as more geniuses, more benefactors as well as more criminals, among men than among women. This conclusion is often cited in the literature of the feminist movement. Lipmann's article on the "Psychology of Women's Work" (in *Die Frau*, 1920), was an objective determination of the psychophysical characteristics of women, and, accordingly, an evaluation of woman's claim to special occupations.

When the war broke out, and the French led the way in the testing of professional aptitudes with their examinations for aviators, Lipmann became one of the first to develop and apply this idea in Germany. His tests for typesetters (with Dora Kreis), for industrial apprentices (with O. Stolzenberg), and his suggestions for the testing of telegraphers all possess historical value. His booklet on "Psychological Vocational Guidance" went through several editions, and first acquainted German readers with the new methods of vocational guidance. His "Questionnaire for the Psychological Characterization of the Intermediate Vocations," which was translated into several languages, became the basis for the psychological investigation of vocations. His classification of vocations according to mental characteristics is one of those which has received most attention. With F. Baumgarten, he gathered the first bibliography of vocational guidance and aptitude testing. His researches on the practical intelligence of children, which he published with O. Bogen under the title "Naive physics," were important. When a commission was formed for the investigation of production and marketing conditions in German industry, Lipmann was selected as scientific secretary for the committee on labor performance; and his work in this post was published in the reports of that committee.

As time went on, he concerned himself more and more with human work. He passed from the investigation of single vocations to human work as such, and in his "Outline of the Science of Labor" (1926), which was later

enlarged in his "Textbook of the Science of Labor" (1933), he emphasized all the fields of enterprise into which the human factor enters as facilitative or inhibitive. Especially interested in the social side of human labor, he often took up his pen in order to point out the social effects of the practical applications of psychology, as, for example, those of intelligence testing in schools and business. Here Lipmann, the socially thinking man, sharply opposed the uncritical use of vocational aptitude tests. Hence rose his struggle against the widely spreading charlatanism in psychology, to which he was led also by his strong critical sense.

Lipmann was an excellent mathematician. He attempted to increase the application of mathematics in psychology, and thus to give to psychological investigations a greater, more objective value. Although his work, "Methods of Enumeration and their Application in Psychological Statistics" (1921) is used by few psychologists, it nevertheless contains many suggestions which have already found application. "The Working-time Problem" (1924), which had two editions, also sprang from this inclination toward calculation.

Lipmann was a giant for work. His long working day had no pauses, his working year no holidays. Thanks to this extraordinary capacity for work, he was able to complete hundreds of writings, of which many have been translated into other languages. They show how many-sided his interests were. In 1920, he published with P. Plaut a symposium on "The Lie," in which this problem was discussed by

theologians of various denominations as well as by scientists and practical workers. He edited, with E. Stern and M. Isserlin, a "Handbook of Psychological Aids to Psychiatric Diagnosis." With O. Bogen, he published a presentation of material on "Gait and Character" which had been obtained through a prize-contest (1930). All these works are distinguished by their careful indication of sources, their historical perspective, their precise formulations. In everything, Lipmann saw the main trend; he immediately comprehended the practical as well as the scientific significance of a discovery. He seldom undertook researches himself, but he often suggested them. His strength lay in formulations, definitions. He was a great analyzer, organizer and systematizer, and thereby did worthy service to applied psychology. He will remain in the history of psychology as a pioneer, a layer of foundation stones.

The *Zeitschrift für Angewandte Psychologie*, which he and W. Stern founded in 1907, when Lipmann was only 27 years old, is a creation of enduring value. Lipmann conducted the section for correspondence and discussion in this journal, showing himself to be an editor of quite unusual type, and developing his department into an organ with a high scientific value in itself. It became a place to which psychologists of all countries gladly sent contributions, because publication there already signified quality. Space was made for every scientific discussion which concerned itself with concrete facts. The works of both editors were, by principle, excluded from discussion. Lip-

mann himself always observed the strictest restraint. One must read such polemical articles as "More Psychotechnology in Psychotechnology" with a professional eye, in order to appreciate the restrictions which the author placed upon himself.

Lipmann's flair for quality, for detecting a useable idea, was a valuable talent. The journal frequently received articles from abroad, from persons living remote from any scientific centre, as, for example, a German teacher who had strayed off to Siberia, a psychologist earning a living as a civil employee somewhere in Lithuania, a former student off in a small Balkan town, etc. Lipmann made it his business to find what was worth while in these awkwardly written contributions, and to give them new form. He showed connections with earlier literature through references, made calculations on the basis of the material submitted, drew graphs, and thus often created an article in which one could scarcely perceive the original form. The contributor was thus encouraged to further labors.

The wealth of its reviews, in which the international literature received great attention, made the journal indispensable to every practical psychologist, and gave it a position of international leadership. Nevertheless, on October 1st both editors were discharged from the journal which they had created and so successfully con-

ducted for more than a quarter of a century—because of the "new cultural movement" in Germany, as it was stated in the circular letter to the associate editors.

Lipmann had been in Bern on the 8th of July. At that time the directorate of the International Psychotechnical Association, of which he was a member, was meeting there. When he was discharged from his University position, he immediately sent the secretary a letter in which he returned his mandate, because he could not retain this position when he no longer had the confidence of the German people. At the meeting of the directorate, Lipmann received the answer: "Our Association is purely scientific, and has no interest in questions of racial and religious membership, but only in scientific merit. You were not elected by the nation, but by your colleagues of all countries. They now express their fullest trust in you. The resignation is not accepted."

None of us who were there will ever forget his beaming countenance. When a new editorial position was offered to him, he answered briefly, "There can be no substitute for what has been lost." He was so bound up in his Zeitschrift, that he passed away in the very moment when the activity which had become so dear to him was brought to an end.

His life-work torn from him, his heart would beat no more.

Abilities, Attitudes and Success

A Study of Sewing-Machine Operators

BY DAVID GRAUER, *Jewish Social Service Bureau of Chicago*¹

Certain of the varied influences conditioning a worker's attitudes and performance are illustrated, and indeed measured, in this study by Mr. Grauer.

The abilities, attitudes, and work adjustment of fifteen women employed in a shop for the handicapped were studied by tests, interviews, supervisors' ratings, records of hourly wage rates, and social case histories. The results are presented in the form of rank order correlation coefficients and case studies. The highest correlation found, .67, was between wages and an average of four psychological tests. There was a correlation of .42 between wages and attitudes revealed during the interview and examination. Interviews and case studies of the workers gave some understanding of personality tendencies and suggested plausible explanations of disparities between test scores and wages.

THIS intensive investigation of fifteen women electric sewing-machine operators employed in a workshop for the handicapped raised the following questions: What are some of the manual and mental abilities of these employees? What are their attitudes toward the work and the supervision? What is the relationship between their work adjust-

ment and their abilities, attitudes, and social histories?

The aim of the Industrial Workshops of Chicago, where the study was made, is to rehabilitate handicapped individuals, not to operate for profit. Therefore, the observation, training, and supervision are more thorough and better adapted to individual needs than in the ordinary industrial plant.

To measure the abilities and attitudes of the women we used psychological tests, interviews, and ratings of shop supervisors. Fifteen women were examined individually. Thirteen of them had been working at the Shops for over two years; the remaining two for over one year. The age range is from 23 to 55 years, the majority being between 35 and 45 years old. Most of

¹ The writer is greatly indebted to Professor Arthur W. Kornhauser for his kind help and criticism in the preparation of this paper. Thanks are also due to Miss Schwarzman of the Jewish Social Service Bureau and to Miss Freedman of the Industrial Workshops for their co-operation in making the study possible, as well as to the Western Electric Company for their permission to use the dexterity boards and norms.

the women are foreign born, but speak and understand English, although few can read or write fluently. The average hourly earnings of the entire machine sewing department were 35.5 cents. Both the mean and median earnings for the fifteen women examined were 37 cents an hour, indicating that our group is fairly representative of the employees in this department.

Manual dexterity and speed of movement were measured by the Western Electric Pegboard (called Board I) and the O'Connor Finger Dexterity Board (called Board II). These boards, described by Miss Hayes,² were standardized on several thousand women employed at the Western and General Electric Companies and show a definite relationship to success in jobs requiring manual dexterity. In order to obtain an estimate of the ability to think in spatial terms—an ability needed in all skilled manual trades—two of the most discriminative tests of the Arthur Point Performance Scale were used: the Porteus Maze Tests and the Kohs Block Design Test. Adequate mental age norms are available for both of these tests; the Porteus Mazes, moreover, have yielded high correlations with industrial adjustment in studies by Porteus and Treat.³

In addition to taking the tests, each woman was interviewed and asked to indicate the response to the questions

below that most nearly agreed with her own attitudes:

General Job Satisfaction

How well do you like to work here?

1. I like it very much.
2. I like it fairly well.
3. I don't care much one way or the other.
4. I don't like it very much.
5. I don't like it at all.

Interest and Monotony

Are you interested in the kind of work you are doing?

1. I think it is very interesting.
2. I think it is pretty interesting.
3. I think it is not very interesting.
4. I think it is pretty monotonous.
5. I think it is very monotonous.

Fatigue

Do you get tired at the work you are doing?

1. The work hardly tires me at all.
2. I feel moderately tired at the end of the day.
3. I feel very tired at the end of the day.
4. I feel very tired after working a short time.
5. I feel very tired most of the time—have to rest often.

The examiner also rated the women on their attitude towards taking the tests and toward failure in the tests. The following "scales" were used:

Attitude toward Taking Tests

1. Very co-operative
2. Moderately co-operative
3. Somewhat resistant
4. Very resistant
5. Refused to take tests

Attitude toward Failures in Tests

1. Apparently objective
2. Slightly embarrassed
3. Considerably embarrassed and annoyed

² Elinor G. Hayes. Selecting Women for Shop Work. *Personnel Journal*, 1932, 11: 69-85.

³ Katherine Treat. Tests for Garment Machine Operators. *Personnel Journal*, 1929, 8: 19-28.

4. Marked emotional display (often characterized by derisive comments about the tests)
5. Great excitability or loss of temper

The number preceding each response was considered the "score" for that response. The ratings on the first three factors were combined and designated "Work Attitudes"; the examiner's ratings of test behavior are called "Test Attitudes." The five attitude scales were then averaged to produce a "Total Attitude" score.

STATISTICAL RESULTS

As a measure of work adjustment, hourly earnings were found to be the most objective criterion. The following correlation coefficients (Spearman rank order method) were obtained between earnings and test and attitude scores:

Earnings and

Board I. ....	.64
Board II. ....	.58
Porteus. ....	.49
Kohs. ....	.53
Average of Tests. ....	.67
Test Attitudes. ....	.42
Work Attitudes. ....	.33
Total Attitudes. ....	.44

Correlations were also obtained between test scores and attitudes, as well as between test attitudes and work attitudes. Among these, the highest correlation (.43) was found between tests and test attitudes, indicating a tendency for those whose attitude during the test is most favorable to attain the higher test scores. Whether this means that a favorable test attitude leads to a higher score in the test, or that the women having more ability are in general more self-confident and

coöperative cannot, of course, be determined from the correlation coefficient. In many cases, however, it did appear that unfavorable test attitudes were associated with inferior abilities, poor work adjustment, and an inferiority feeling that expressed itself in resentfulness and in emotional outbursts during the tests. Test attitudes and work attitudes correlate .39, indicating possibly the existence of general attitudes that are common both to the work and to the test situations.

It is necessary to exercise considerable caution in making generalizations from the coefficients obtained here, because of the small number of cases, the special character of our subjects, and the working conditions which differ from those of the ordinary factory.

In summary, there is a high correlation between earnings and an average of the tests and a small but significant correlation between earnings and attitudes. Whether favorable attitudes result in higher earnings or whether higher earnings produce the more favorable attitudes or whether other factors influence both of these variables cannot be determined from the relationships found. Study of individual cases, however, favors the first explanation.

Supervisors' Ratings

Besides earnings, the opinions of shop supervisors or foreladies were used as a criterion of industrial adjustment. Although wages are objective and reliable in judging job success, they are limited in that they often do not take into consideration such facts as attitudes, amount of supervision required, and differences in experience.

The employees were rated (in the

presence of the writer) by two supervisors, one of whom had charge of ten of the women examined, while the other supervised the remaining five. The supervisors were asked to place the women examined in rank order on the basis of speed in working, quality of work, industry, and amount of supervision required. In view of the fact that the rank orders on the several traits and factors were almost identical (giving evidence of the so-called "halo effect"), it was decided to use only the ratings on quality of work produced.

The correlations between ratings of quality and earnings were .97 for ten of the women and .70 for the rest. In other words, estimates of work adjustment based on records of earnings and job success as judged by supervisors were in close agreement.

In addition to estimating quality of output, the supervisors were asked to rate their employees on the same attitudes on which the women rated themselves. The correlation between these self-ratings and the supervisors' ratings was .33. An analysis of the attitude ratings brings out the fact that there is most agreement between supervisors and workers in estimates of interest and least agreement in ratings on fatigue.

SUMMARY OF CASE STUDIES

By dividing the women into two groups on the basis of their test ranks—an above average and a below average group—and also by finding the differences between rank in tests and rank in earnings, we discovered very close or moderate agreement between tests and earnings in eleven out of the fifteen cases. In eight cases the differ-

ence between rank in the tests and rank in earnings was one step or less.

The following brief extracts illustrate several cases showing close agreement between tests and earnings:

Mrs. A. ranked first in earnings and first in an average of all the tests. During the examination she gave the impression of being alert, coöperative, and interested. Her work was considered by her supervisor to be of excellent quality, and she was recently promoted to the rank of supervisor. Although she had had no previous sewing experience, she spent only three days in the training department before being transferred to the regular production department.

Miss N. and Miss O. were unable to learn to operate a sewing machine efficiently in spite of the fact that many months and much patient effort were expended in an attempt to teach them the elementary processes. They were finally given such miscellaneous work as hemming towels and cutting threads; but even at this work they were not efficient, their earnings being less than half of the average paid the entire group. These two women scored below a mental age of seven on the Porteus and Kohs tests, confirming the conclusion of Miss Treat that individuals with a mental age below eight are unable to learn to sew garments on a power-machine. In the dexterity tests Miss N's score was below that of the thousand women tested by the Western Electric Company. Miss O's score was excelled by 98 per cent of the women.

One of the main objectives of the case studies was to discover the reasons

for lack of close agreement between the rank orders for tests and for earnings in the four cases in which agreement was not close. If our tests measure abilities essential to machine operating, then lack of correspondence between tests and earnings might be the result of any of the following conditions: in those cases in which the rank order indicated that performance in the tests was higher than earnings, the explanation would be that the worker did not apply herself, because of lack of interest or motivation, or because of emotional factors. In those instances in which earnings were higher than test scores, the reason might be that either the earnings or the tests were not an accurate measure of the employee's abilities, or that the woman possessed certain favorable personality traits which compensated for her inferior abilities. The descriptions below indicate that plausible explanations of this type may be found by means of an analysis of the four cases in which disparities in rank orders occurred.

Mrs. G. is one example. Her rank in earnings was 7.5, but in the tests she ranked thirteenth. The reasons for this difference appear to be as follows: Mrs. G. has an unusually cheerful and stable personality; she is very much interested in her work; but in spite of considerable previous sewing experience, her supervisor's estimate of her work is only "fair," and she is considered in need of "constant supervision."

Miss L. ranked 12th in earnings but fifth in the tests, her production record being much inferior to her test rank. The social history of this woman, who was a serious behavior problem, an

unmarried mother, and a pauperized individual, adequately explains her lack of application resulting in the disparity between her abilities and her earnings.

Mrs. J. is another illustration of an operator whose earnings are lower than would be expected from her test scores. Her rank in earnings was tenth, while in the tests she ranked fourth. The explanation lies in Mrs. J's strong feeling of inferiority and insecurity. When she first entered the Shops she felt she was "too old to learn." She was slow and overcautious, although her work was of good quality. Her progress was fairly steady until recently, when she caused a serious disturbance because of a feeling that she was being underpaid. This emotional outburst was probably conditioned by factors in the family situation which accentuated her inferiority feeling, according to the case workers.

Finally, Mrs. R., who ranked sixth in earnings but only twelfth in the tests, was the most resistant and antagonistic of the women examined. For this reason it may be doubted whether her test scores are an adequate measure of her abilities. Although Mrs. R. is considered a fairly good worker, her rank in earnings somewhat overestimates her abilities when compared with the estimate of her supervisor. Furthermore, recent reports indicate that Mrs. R., who is one of the oldest employees at the Shops, is not regarded as such a skilled worker as she had formerly been considered.

In addition to ratings of test attitudes, certain qualitative descriptions and subjective impressions of the women's reactions were noted in the

interview. A comparison of these descriptions with the recorded opinions of supervisors showed that in twelve of the fifteen cases the adjectives and phrases used by the examiner were similar to those of the supervisors. It thus appears that in the majority of the cases the behavior and attitudes of the women during the examination was characteristic of their behavior while at work in the Shops.

Although the social histories were of value in individual cases, study of the social data revealed little difference in

personality traits or in sewing experience between those workers earning above average and those earning below average wages. Two of the women earning above average wages and three of the women earning below average wages had sewing experience before being admitted into the Shops. The employees showing favorable and unfavorable personality traits were about equally divided between the "above-average" and the "below-average" groups.

A New Principle in Hygienic Lighting

By C. E. FERREE AND G. RAND, *Research Laboratory of Physiological Optics,
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To eliminate glare and at the same time to provide enough white light is a contribution to workers' comfort, efficiency, and safety. In devising the lighting unit here described, the authors have brought to bear their ingenuity in meeting practical demands as well as their long experience in laboratory research.

The designers describe a new fixture for industrial lighting which: (1) eliminates all glare from the source of light; (2) reduces glare from the work by diffusing the light before it reaches the plane of work; (3) provides a lighting unit free from reflecting surfaces which deteriorate with use and which quickly lose their reflecting efficiency because of the collection of dust; (4) retains as nearly as possible the type of distribution of light that is given by the lamp; (5) gives ceiling, walls and objects in the plane of work brightnesses which are not objectionably different; (6) provides a whiter light than is ordinarily obtained from commercial units; (7) accomplishes all of these results with a minimum loss of light.

OUR purpose is to describe a lighting unit which, without glare, efficiently illuminates the work room. In former articles¹ we have called attention to the need for new types of lighting units, designed to protect the eye from the excessive glare that has been produced by the use of higher intensities of light. The older fixtures were devised for lights of moderate and low intensities, and even then were scarcely adequate for the protection of the eye from glare. The sharp increase of intensity which

has been introduced in lighting practice within the last ten to fifteen years has raised again the problem of fixture designing. Our work in connection with the National Research Council's Committee on Industrial Lighting impressed us with the need of approaching the problem of glareless lighting from an altogether different angle. It seemed advisable to abandon wholly or in part the use of reflectors and return to the use of shades or baffles of correct design, suitably positioned for the interception of the glare-producing rays. For several years past we have been engaged in planning and adapting the use of glare baffles to lighting purposes, covering a wide range of situations. One of the results of this work

¹Ferree, C. E. and Rand, G. Intensity of light and speed of vision studied with special reference to industrial situations. Part I, *Trans. Illum. Eng. Soc.*, 1927, XXII, 79-110; etc.

is the unit to be described in this paper.

A brief and elementary review of principles may not be out of place at this point. Primitive lighting was accomplished by the use of unshaded sources. Later, shades were devised to protect the eye from the glare of the source. Still later, the inside of these shades was surfaced to give a high reflecting power, in order to save as much of the intercepted light as possible; and the shades were shaped to direct the light. Shades were then called reflectors or deflectors. All shades, of necessity, had openings of considerable size which formed glare spots in the field of view. One way of concealing the opening from view is to turn it toward the ceiling. All the light is thus reflected to the ceiling and from there to the working plane; or from the ceiling to the walls and thence to the working plane. Such indirect lighting conceals the opening of the reflector from the eye, but it gives a disproportionate and unnatural brightness to the upper part of the field of view. The ceiling, even when uniformly illuminated at moderate intensities, is brighter than the work; and when high intensities are secured on the working plane, the ceiling becomes uncomfortably bright. The method is also somewhat wasteful of light; its efficiency is too strongly dependent on the color and reflecting power of walls and ceilings; and this dependence limits its successful use to the more favorable interiors.

Among the evils of present methods of direct lighting, the following may be noted: (a) There is excessive and pun-

ishing glare from the lamp and from both lamp and opening of reflector, or from the enclosing bowl of glassware which is sometimes used instead of a reflector. (b) Frequently the light passes to the working plane by direct radiation from the lamp or is directed without diffusion from the polished inner surface of the reflector to the working plane, thus creating a condition of maximum glare on the work. (c) In case an opaque bowl-shaped pendant reflector is used, the ceiling and upper part of the room receive no light directly from the source and are in comparison with the lower part of the room, unpleasantly dark. The glare from the unshaded opening of the reflector is intolerable and the effect on the eye is increased by the dark background against which it is viewed. (d) If a translucent pendant reflector is used, more light reaches the ceiling and upper part of the room, but this increases the glare from the surface of the reflector. (e) In case a translucent inverted reflector is used, the proportion of light passing toward the upper and lower parts of the room depends upon the density of the reflector. In proportion as the amount of light passing to the lower part of the room is increased, the glare from the reflector is increased, and we approach as a limit the characteristics of direct lighting with a pendant opaque reflector; and in proportion as the amount of light reflected to the ceiling is increased, the glare from the reflector is decreased, but the ceiling and upper part of the room become disproportionately bright. (f) A better distribution of light is obtained if an enclosing globe or housing

of glass or other translucent material is used, but the glare from the source is cut down only in proportion to the amount of light wastefully absorbed by the enclosing glass.

None of these devices for eliminating glare from the source has been very successful. Moreover, the success that has been attained is at the sacrifice of either intensity or uniformity of distribution of light, or both. For the welfare of the eye, glare should be eliminated at any cost; but in so doing it is desirable in most lighting situations to retain as nearly as possible the distribution natural to the lamp, and in all cases to waste as little light as is possible.

The unit to be described in this paper has the following objects:

- (1) To eliminate all glare from the source of light.
- (2) To reduce to a minimum the glare from the work by diffusing the light before it reaches the plane of work.
- (3) To provide a lighting unit free from reflecting surfaces which deteriorate with use and which quickly lose their reflecting efficiency because of the collection of dust.
- (4) To retain as nearly as possible the type of distribution that is given by the lamp.
- (5) To give ceiling, walls and objects in the working plane brightnesses which are not objectionably different.
- (6) To provide a whiter light than is ordinarily obtained from commercial units. This gives the eye greater comfort and

efficiency and makes the change from day to night lighting less uncomfortable and objectionable.

- (7) To accomplish all of these results with the minimum loss of light.

The unit is in effect a lamp shade with baffles or shields disposed on sides and bottom to give a maximum protection from glare and a minimum waste of light.

Rather than wastefully absorb light in all directions in a futile and misdirected attempt to eliminate glare, this unit, by means of its specially designed and positioned baffles, intercepts only those rays travelling in the critical directions and allows the free passage of all others. To produce the desired effect not only must the baffles be properly shaped and positioned with reference to the filament of the lamp, but their surfaces must be made non-reflecting. If they are made reflecting, the glare is transferred from the lamp to the outer surface of the housing. Both surfaces of the baffles in the unit are painted a flat black. With the unit in question correctly proportioned and constructed, glare seems to be eliminated just as effectively with a 1000-watt as with a 25-watt lamp. In fact the unit may be regarded as glare-proof for all intensities coming within the range of lighting practice.

Part *A* of figure 1 is a side elevation of the unit slightly broken away at one point to show the construction of the bottom baffle; part *B*, a bottom plan view of the unit; and at *C* and *D*, modified forms of the bottom baffle. These modified baffles were designed more

especially to be used with a unit of circular shape, but may be used also with a unit of rectangular shape. Figure 2, a photograph of rectangular unit in position, shows the lighting effects produced. This photograph gives a fairly correct representation of

made up of side baffles; a shallow box beneath these baffles; a baffle or louver across the opening at the bottom; and, immediately above the bottom baffle, a plate of glassware having a high coefficient of transmission and diffusion.

The side baffles consist of upwardly

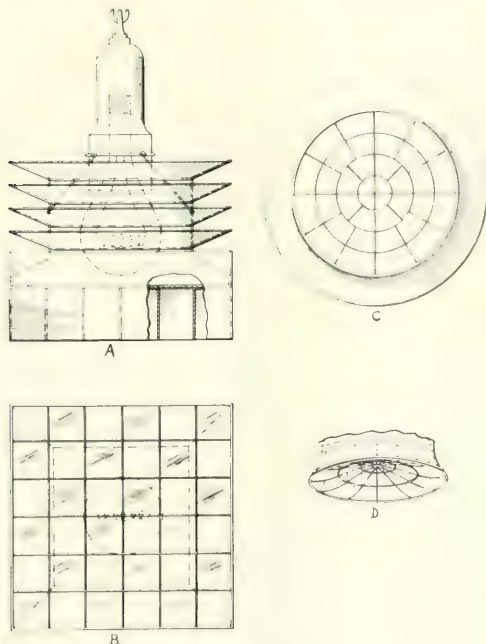


FIG. 1

the appearance of the unit when illuminated, but a comparatively poor representation of the lighting effects actually obtained on the ceiling.

The construction will not be described in detail. The unit consists essentially of a housing or enclosure

and outwardly inclined vanes or plates spaced apart in a vertical direction by a distance equal to or slightly exceeding the vertical distance between the top and bottom plane of each vane. Each of the vanes is in the form of a hollow frame which may have a rec-

tangular, circular, or other shape to conform to the shape of the horizontal frames, provision being made for changing the spacing when desired.



FIG. 2

cross-section of the enclosure that is desired. The vanes are supported on the bottom casing by means of wire

The breadth of these vanes, their number, the distance at which they are spaced, their angle of inclination

and their relation to the lamp filament are all important features in securing the desired effects.

The bottom baffle shown at *B*, figure 1, has a cellular construction similar in appearance to an egg-crate. It consists substantially of two series of vertical partitions extending across the opening of the enclosure at right angles to each other. The partitions extending in each direction are parallel. They are in the present model spaced apart by about 2 inches, and are approximately 2 to 3 inches wide. Through the downwardly extending passages formed by these partitions, the greater part of the light is allowed to pass to the plane of work, only such rays being intercepted as would produce glare in the eyes of those working or located in various probable positions in the room. To one directly under the unit or nearly so, glare is experienced only when the eyes are turned upward. No glare can be seen from other points in the room. To make protection complete, both surfaces of the partitions are painted flat black. When the unit is installed in the proper position in the room and at the correct distance from the ceiling, the opening as seen from the various positions in the room is either not luminous at all, or has a dull luster or soft silvery sheen of such low brightness as not to cause annoyance or discomfort to the most sensitive eye.

At *C*, figure 1, the baffles are arranged in the form of concentric circles. Partitions circularly disposed shield the eye completely only when the gaze is directed along the common radius of the circles. In all other directions glare is experienced. In

order to shield the eye in all directions, radial segments are inserted between the circles at suitable places. While good results are obtained with this form of baffle, we have not found it to be so entirely satisfactory as the "egg-crate" type shown at *B*.

At *D* of figure 1 the partitions forming the baffle are both circular and radial. The radial partitions are curved, so that the appearance is that of a bottom slightly convexed upward. Intersecting the radial partitions at suitable vertical levels are circular partitions. Either illuminated or dark, this baffle gives a very pleasing effect. Both it and the type of baffle shown at *C*, however, obstruct the downward passage of the light more than the cellular or "egg-crate" construction shown at *B*.

In order further to protect the eye from glare, the socket is provided with a downwardly extending canopy or glare shield which encloses all the bright parts of the socket and lamp. In the greater number of even the better lighting units in use at the present time these parts have a high brightness and are very disturbing to the eye. The canopy is shown at *A* of figure 1. Because of the relatively high intensity of light which it is bound to receive, the surface of this canopy should in no case have a high coefficient of reflection if due regard is to be given to the welfare and comfort of the eye.

The construction at the bottom of the unit is such that the baffle and diffusing plate may be removed readily for the purpose of replacing the lamp or for cleaning the upper surface of the diffusing plate. The details of this construction need not be given here.

The diffusing plate thus far used is of imported Belgian flashed opal glass, both surfaces of which are smooth.

The unit as described in this paper and as represented in the drawings and photograph is a laboratory product, constructed to illustrate a principle. It has not had the benefit of skillful and esthetic design. The photograph is also a laboratory photograph which has been in no way retouched or modified to improve the apparent lighting effects.

In the model shown at *A* of figure 1 the boxing or housing at the bottom of the fixture is doubtless deeper than need be, and thus entails a greater loss of light than is strictly necessary. This, however, is but a detail of design which can be remedied without difficulty. Also, if desired, the light can be directed or lifted from the boxing by the use of a lamp with a silvered ring of suitable breadth, located at a suitable distance below the filament of the lamp. We have used such a lamp with good effects. The baffles are given a slightly higher brightness, but the amount of light delivered to the

room is increased. The reflecting ring may be either on the lamp or detached from it; furthermore, a reflecting device of a different shape may be employed. The sides of the box may be made of art glass or other glassware of suitable density, if desired.

As already indicated, a further important advantage of the unit is the whiteness of the light obtained. This is due to the fact that the natural whiteness of Mazda light is not changed in the unit by the presence of surfaces which reflect selectively. Commercial reflectors, even silvered glass, change the color of the light towards red and yellow because of selective reflection. A great deal of the objectionable color of artificial illumination is due to the reflectors employed.

Glare and color of light are generally recognized as the two outstanding problems in hygienic lighting. The use of the principles described in this paper not only offers a solution to the first of these problems but makes a definite contribution to a *practical* solution of the second.

Are Personnel Data Really Useful?

BY DANIEL HARRIS, *Lehigh University*

Dr. Harris sounds a note of healthy skepticism.

Scholastic grades, mental ability, age, hours of study, and other data about a very homogeneous group of college freshmen were intercorrelated. Most of the relationships were found to be negligible, which fact leads the author to doubt the value of gathering such information. The slightly higher correlations found by previous investigators are probably spurious due to heterogeneity of groups. More critical gathering and treatment of personnel data and the use of more homogeneous samples are recommended.

FRESHMEN entering many institutions of higher learning undergo lengthy mental and physical examinations, and are later subjected to voluminous questionnaires, personality tests, and other forms of inquisition. All this information is carefully gathered together in individual folders and neatly filed away in the Personnel Office or its equivalent. What happens to it from then on is shrouded in mystery.

Presumably, the data are used for guidance purposes. Any such use, however, rests on extremely dubious foundations, since, aside from the fact that intelligence tests predict grades to some extent, there is very little evidence to show that any of this material correlates with or predicts anything. Moreover, it is the writer's belief that the few appreciable correlations which have occasionally been secured were spuriously high due to heterogeneity of the groups.¹ At least in the present results, based on an

uniquely homogeneous group of subjects, it can be seen that the variables amenable to correlational treatment do not correlate with grades, nor with intelligence, nor with each other.

The subjects were members of the class entering the City College of New York in February 1929. Numbering 234, they constituted approximately 30 per cent of the entire class, selected from the latter so as to secure the largest possible group with the least possible heterogeneity. Due to the composition of the City College student body, this procedure resulted in a group all of whose members were male, native-born of Jewish parentage, with at least one foreign-born parent and with some foreign language spoken at home in addition to English; none of them engaged in outside work during the first semester. It is believed that most of the probable sources of spurious correlations were thus eliminated.

The data came from the following

¹ See pp. 258-9 in H. E. Garrett, *Statistics in Psychology and Education*, for a discussion

of spurious correlations due to heterogeneity of subjects.

sources: Physical examination at entrance; average grade for first semester; score on revised Army Alpha;² score on Payne Inferiority Test;³ score on Marston Introversion-Extraversion blank;⁴ questionnaire filled out in May 1929.

Average grades were computed by assigning arbitrary numerical values ($A = 8$, $B = 5$, $C = 3$, $D = 2$, $E = 1$, $F = 0$) to each letter grade received in courses, multiplying each by the number of credit hours involved, and

background, preferences along various lines, vocational choice, weekly time-schedule, etc. In all, fourteen variables lent themselves to correlational treatment.

In table 1, age is in terms of months at the time of answering the questionnaire. Weight is in pounds and height in inches, stripped. "Number of Recreations" refers to the number of items listed in answer to the question, "Please give the names of your usual forms of recreation." "Number of

TABLE 1
Averages of the group on fourteen items of information

VARIABLE	AVERAGE	σ (dis)
1. Age (in months).....	202.94	10.53
2. Weight.....	130.63	17.87
3. Height (in inches).....	66.13	2.44
4. Alpha score.....	157.07	17.74
5. Average grade.....	3.66	1.37
6. Inferiority score.....	44.03	12.39
7. Extraversion score.....	62.97	11.63
8. Number of recreations.....	6.66	2.41
9. Number of periodicals read.....	5.10	2.26
10. Hours of study.....	14.82	6.06
11. Hours of athletics.....	10.15	6.20
12. Hours of recreation.....	19.28	11.89
13. Hours of sleep.....	59.28	4.73
14. Number of kinds of books.....	3.57	1.43

dividing the result by the total number of credit hours. The questionnaire took up five pages and asked for detailed information as to family,

² Published by the Psychological Corporation, Grand Central Terminal, New York City.

³ See M. H. Bressler, *Study of the Feeling of Inferiority Among College Freshmen*. Master's thesis, Department of Psychology, Columbia University, May 1930.

⁴ See L. R. Marston, *Emotions of Young Children*. Univ. Iowa *Studies in Child Welfare*, 1925, vol. 2, No. 3.

Periodicals" was obtained from the responses to a similar question. Hours spent in study, recreation, and other activities were calculated from the time schedules and refer to hours per week. "Number of types of books" is based on the number of checks made in response to the request, "Please check the type or types of books you read most commonly for recreation:"

..... Light novels
 Biography
 Poetry

..... Adventure
 Classical
 Scientific
 Romance
 Historical
 Humorous

Examination of table 2 reveals few significant relationships. Of the 91 correlation figures, the only one as high as .50 is that between height and

study. The only other figure above .20—that between the number of recreations and the number of periodicals listed—might easily be due to the presence in both variables of what may be called "graphic loquaciousness."

Some investigators have reported higher correlations between several of the present variables. Thus Crawford (2) May (6) and Spence (7) found

TABLE 2
Intercorrelations among the fourteen variables

VARIABLE	AGE	WEIGHT	HEIGHT	ALPHA SCORE	AVERAGE GRADE	INFERIORITY SCORE	EXTRAVERSION SCORE	NUMBER OF RECREATIONS	NUMBER OF PERIODICALS	HOURS OF STUDY	HOURS OF ATHLETICS	HOURS OF RECREATION	HOURS OF SLEEP	NUMBER OF KINDS OF BOOKS
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
2	.16													
3	.03	.51												
4	-.19	.10	.14											
5	-.16	.00	.01	.31										
6	.01	.02	.08	.00	.04									
7	-.04	.01	.00	-.10	-.21	-.33								
8	.01	-.01	.00	.00	-.05	-.02	.22							
9	-.06	.04	-.09	-.02	-.04	-.07	.15	.24						
10	.05	.05	.03	-.09	.24	.11	-.12	.04	.12					
11	-.15	.04	.00	-.14	-.08	-.14	.22	.19	.14	.05				
12	-.08	.02	.06	.13	.00	-.01	.04	.08	-.06	-.15	.07			
13	-.04	-.19	-.05	-.05	.01	-.09	.09	.02	-.01	-.15	.06	.16		
14	.08	.05	.01	-.04	-.07	.15	.04	.12	.11	-.07	.06	-.06	.03	

weight, which tells us little we did not know. The correlation of .31 between Alpha and grades is lower than such figures usually are. Extraversion's negative correlations with grades and with inferiority feelings, and its positive correlations with number of recreations and hours spent in athletics, are all logical, though small. The same may be said of the positive relation between grades and hours spent in

correlations ranging from $-.15$ to $-.46$ between intelligence test score and time spent in study; Gitting (5) secured a figure of .19 between weight and intelligence, and one of .34 between weight and grades; Chauncey (1) using 8th and 9th grade school children found correlations as high as $-.32$ between age and intelligence and $-.50$ between age and Stanford achievement; while Flemming (3) got

a figure of $-.29$ between age and grades. In another study Flemming, using the Woodworth P.D. sheet, found correlations of $-.11$ with age and $-.21$ with hours of sleep.

In none of the investigations just quoted were the subjects selected for homogeneity as in the present instance. In the case of Chauncey's work there was present an extra element of heterogeneity in that his subjects, being school children, probably comprised a wider range of intelligence than can be found in a college group; and it is worthy of note that Chauncey secured the highest correlation of any investigator. In this connection it is also of interest that the correlation between age and Alpha for the entire Freshman class of 829 students was $-.29$, as against the figure of $-.19$ for the present group, selected for homogeneity from the larger one. It is, therefore, the writer's opinion that the correlation figures quoted from previous investigators, even though most

of them are low, are nevertheless spuriously high.

It would thus seem that none of the personnel items here treated has any great significance, judging from the present and previous investigations. It is freely admitted that such items do not exhaust the field of personnel investigation and, moreover, that data not suitable for correlational treatment may show significant relationships through different types of analysis. But here again the actual findings are meagre and contradictory.⁵ In any event, the information collected is certainly burdened with a great deal of dead wood. What is sorely needed in student personnel procedure is fewer bulky questionnaires and more critical questioning as to what is worth seeking.

⁵ For a comprehensive review of the literature on one subdivision of the field, see D. Harris, Relation to College Grades of some Factors Other Than Intelligence. *Archives of Psychology*, 1931, No. 131.

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University of Minnesota Testing Bureau

By E. G. WILLIAMSON, *Director, The University of Minnesota Testing Bureau*¹

The breadth and vitality of Minnesota's interest in personnel research and its practical applications to student problems is again illustrated in the following account of a recently established service.

FOR many years the University of Minnesota has been experimenting with methods of reducing its scholastic mortality rate. At least three important factors contribute to this mortality: first, the enrollment in large numbers of students with inadequate educational background for college work; second, the large number of high-aptitude students with inadequate study skills, or low scholastic motivation; third, the large number of students who enroll in college without sufficient vocational orientation to insure adequate scholastic effort. Several methods have been devised for meeting these educational problems.² Dean J. B. Johns-

ton, Professor D. G. Paterson, and others have devised methods of identifying potentially capable students. Systems of faculty counselors in the various colleges were organized to help orient students vocationally and to motivate them scholastically. A course in How to Study was organized as a supplement to the counseling system. Finally, the University Testing Bureau was organized in the fall of 1932.

This Bureau developed from the experiences of several agencies in the University's personnel program; first the vocational and educational counseling carried on by faculty counselors of the various colleges, and the Committee on Vocational Guidance. These agencies considered vocational and educational testing an indispensable adjunct of their counseling work. Additional background experiences of the Bureau are found in the Minnesota

printed from *The Educational Record*, Dec. 1933, pp. 37-50.

Paterson, D. G. A Program of Student Counseling. Chapter in *Problems of College Education*. University of Minnesota Press, 1930.

Paterson, D. G. et al. The Minnesota Student Personnel Program. *Educational Record Supplement*, April, 1927.

¹ The University Testing Bureau is administered by the Director, with the assistance of the University Board of Admissions which acts as an advisory committee.

² Johnston, J. B. *The Liberal College in a Changing Society*. Century Press, 1931.

Johnston, J. B. Pre-entrance Advising at the University of Minnesota. Chapter IV, pp. 31-44 in *Provisions for the Individual in College Education*, W. S. Gray. University of Chicago Press, 1932.

Johnston, J. B. The Guidance Function in the Secondary Schools and Colleges. In *College Admission and Guidance*. Re-

Self-Appraisal Sessions of 1928-1929,³ and in the methods of vocational diagnosis and advising developed by the Employment Stabilization Research Institute.⁴

The University Testing Bureau is an administrative device for the collection of data necessary for counseling students having vocational and educational problems. Its services have been requested by the faculty counselors, by college administrators, by students and their parents, and lastly by the Board of Admissions for purposes of matriculation and classification. The unique contribution of the University Testing Bureau to vocational orientation is its use of psychological tests and methods in the diagnosis of vocational and educational possibilities of individual students. This method supplements the traditional diagnoses by interviews, work experiences and vocational information. Years of experimentation at Minnesota have demonstrated that these traditional methods are inadequate for the vocational orientation of students; hence, the attempt to devise new and more valid diagnoses. Justification for this innovation is found in the reports of the British National Institute of Industrial Psy-

chology and the Industrial Fatigue Research Board, which show an increase in the validity of vocational guidance as a consequence of analysis by psychological tests.⁵

Vocational counseling as now carried on by the University Testing Bureau consists of the following procedures: first, determination of reasons for a particular vocational choice and the detection of irrational factors in this choice; second, the discovery of unique aptitudes and interests for particular types of work by means of interviews, psychological tests and work experiences; third, the collection of pertinent information regarding occupational duties and requirements from faculty members and published monographs; fourth, utilizing vocational try-out experiences through summer work, part-time jobs, and special college curricula; and finally, judging, on the basis of the above data, what are the prospects for satisfaction and success in a given occupational field.

Tests selected from the following list are given to students counseled by the Bureau. This selection is based upon the particular problem of each student.

Minnesota College Aptitude
Miller Analogies Test for Graduate
Students
American Council on Education Psychological Examination
Otis Test of Mental Ability, H. E.,
Forms A and B

³ Williamson, E. G. and Paterson, D. G. The University of Minnesota Summer Session for Self-Appraisal. An Experiment in Guidance on the College Level. Proceedings of Purdue-Wabash Conference of College Personnel Officers. Bull. 21, Engineering Publications, Vol. XIV, Bull. 21, May, 1930.

⁴ Paterson, D. G. The Minnesota Unemployment Research Project. *Personnel Journal*, Vol. X, No. 5, Feb. 1932, pp. 318-328.

⁵ Macrea, Angus. A Follow-up of Vocational Advised Cases. *J. National Institute of Industrial Psychology*. 1930, V, No. 5.

Burt, C. et al. *A study of Vocational Guidance*. Report No. 33, 1926, of Industrial Fatigue Research Board, London.

Coöperative English Series I and II
Iowa English Training, Form X
Columbia Research Bureau Algebra
Coöperative Algebra Test
American Council French Test
Coöperative German Test

Chapman-Cook Speed of Reading
Van Wagenen Reading Comprehension
Minnesota Reading Examination

Coöperative General Culture
Foreign Literature
Fine Arts
History and Social Studies
General Science
English

Minnesota Clerical Aptitude

Strong's Vocational Interest Blank⁶
Manson Occupational Interest Blank
for Women
McAdory Art Judgment
Meier-Seashore Art Judgment

Minnesota Mechanical Assembly
Minnesota Form Board
O'Connor's Finger and Tool Dexterity

Bernreuter Personality Inventory⁷
Personality Rating Scale⁸

Each student is interviewed briefly by the Bureau's clinical tester to determine the nature of his particular vocational problem and what tests he should take. After this testing, the student is given an appointment with

the director who receives before the interview a folder containing a profile summary of the tests (see sample below, an adaptation of the profile used by the Employment Stabilization Research Institute), a three page case history, filled out by the student, including information regarding family and educational background, high school activities, work experiences, a list of ten occupations in which the student is interested, a transcript of the student's college grades, and a report of health and physical handicaps. Each interview takes one-half hour and is terminated by inviting the student to return for further discussion and by a referral to faculty members for additional vocational information, or by referring to vocational reading material. A bibliography of approximately 1,000 vocational books and pamphlets is in constant use by the Bureau's cases and by the class on Vocations of the University General College. Many students return as many as four or five times; by the end of the present academic year all cases will have been followed up by a second interview. After the first interview, a report is dictated and sent with a profile to a college counselor or administrator. This report summarizes the interviewer's discussion, his judgment of a student's vocational aptitude and orientation, emotional and personal assets and liabilities, and a discussion of any other difficulties discovered such as speech defects, physical handicaps, and family conflicts. Some difficulties discovered in the interview are, of course, too confidential to disclose to other counselors, and in all cases great care is taken to make certain

⁶ This test is scored on the Hollerith Tabulator; the Bureau offers this scoring service to personnel workers and counselors in other colleges at the price of \$1.00 per test for 26 occupational keys.

⁷ For the present this test is being used as an interviewing device; its ratings provide a means of getting students to discuss their personality problems.

⁸ Hawkes, H. E. *Measurement and Guidance of College Students*. Williams & Wilkins Co. 1933. pp. 66-126.

that all information will be used by other counselors only in helping the students. When new problems arise and are discovered in subsequent interviews, additional reports are sent to college counselors and administrators.

A word regarding the *modus operandi* of vocational guidance at the University is pertinent at this point. Despite the fact that the psychological testing movement is some 30 years old in this country, little progress has been made heretofore in setting up objective standards of the necessary aptitudes for various professions. The work of the Employment Stabilization Research Institute in this field is, however, one of the most progressive and hopeful movements. This research will provide sorely-needed norms for certain occupations. But unfortunately, many of the occupations studied by this Institute are not the occupations for which the University offers training; rather they are of a commercial or mechanical nature. One of the most urgent needs in the vocational guidance field is for a national research institute which will, over a period of years, provide these professional norms. Until such norms are provided, vocational guidance in colleges must be carried on in terms of college guidance; that is, the determination of aptitudes necessary for success in the professional training courses offered by the colleges. Professional colleges have developed curricula which a student must master before entering a given profession. There may be some question as to whether all of these curricula actually provide indispensable training; for example, the requirement of Latin for

graduation from some law schools. Eventually such arbitrary professional hurdles will be replaced by standards established by research studies such as those of the Employment Stabilization Research Institute; in the meantime, counselors must advise students in terms of the existing professional standards. Vocational guidance, therefore, becomes not "Can I become a teacher of mathematics?" but rather "Do I have the necessary mathematical aptitude, general intelligence and personality for mastery of the College of Education curriculum?" One must not expect in the present state of the testing movement to determine rigid critical scores below which success is unlikely, but rather to determine critical areas of aptitudes; that is, what is the range of aptitude which indicates probable success; what is the range of aptitude which indicates doubtful success and which must be offset by the possession of other desirable traits such as scholastic drive, sociable personality and the like; and finally, what is the critical area of aptitude the possession of which predicts professional failure?

Such a program of guidance becomes much more possible of attainment under present conditions, since it does not presuppose inflexible professional norms nor infallible aptitude measurement. It is rather based upon the principle of proximate measurement of aptitudes, the matching of these aptitudes with professional norms, and the determination by the judgment of a trained counselor of the qualifications of a student in terms of his total personality rather than in terms of a single trait or aptitude. Furthermore,

such counseling makes it possible to justify broad general training for a student, thereby insuring his adaptability to increasing changes in the various occupations themselves. Fortunately it is now possible at the University of Minnesota to provide this flexible training by means of cutting across college lines through the University College.⁹ This is undoubtedly a step in the right direction and should produce greater flexibility in other college curricula.

Because of the tendency of faculty and students to take the results of testing too literally, reports are made more in general terms than in specific scores; for example, the Strong Interest Test is interpreted to the students not so much in terms of specific occupations, but in terms of broad occupational fields, such as commercial interests, scientific interests, interest in contacts with people, and interest in intellectual things. Far too many students come to the Bureau with the expectation of being told specifically what occupation they should choose, therefore the interviewer definitely tries to help the student think through his own problems in terms of this new evidence disclosed by the testing process. The interviewer, however, does give a very frank statement of his opinion and interpretation to the student, but with caution and with emphasis upon the necessity for interpreting the test in terms of the student's experience and background. In this way the Bureau

hopes to check its interpretations and make certain that judgment is not based upon unfair and irrelevant factors.

The policy of the University Testing Bureau envisages the problem of vocational orientation as an integral part of the whole educational process, at least from the tenth grade of high school through college. Vocational orientation can not be delayed until a student enters college, but must be a continuous process involving the critical evaluation of achievement measured by standardized tests and interpreted by trained counselors and the student himself. When such an integrated system is developed in the high schools and supplemented by tests and other criteria, then high school counselors will be in a better position to advise regarding vocational choice and educational training. Under such conditions, the Bureau's function will become one of collecting background information from the high schools, interpreting these data, and planning a program to satisfy individual needs. A subsequent procedure in such a comprehensive plan of vocational orientation involves the distribution of all this information regarding individual students to college administrators and counselors for skilled follow-up work to insure continued and adequate scholastic motivation. The University Testing Bureau, therefore, becomes a technical agency for the promotion of such a program, for the collection of data pertinent to the problem of vocational orientation and scholastic motivation, for the interpretation of these data for individual students, and for the dissemination of all this

⁹ Report of the President for the Biennium 1930-32. *Bull. of University of Minnesota*, Vol. XXXV, No. 64, Dec. 1, 1932, pp. 183-4.

information to the various collegiate personnel units of the University.

Although the Testing Bureau in its present form was organized in October of 1932, some features of the work had been carried on in the preceding summer at the request of the Board of Admissions. The following data, therefore, cover the period of July 1 to December 31, 1932. During this period, 604 individuals requested the services of the Bureau; 315 were referred by University administrators or faculty members, and 289 students came voluntarily. The 385 men and 219 women were classed as follows: 325 Freshmen, 119 Sophomores, 32 Juniors, 17 Seniors, 12 unclassified, 16 graduate students, 54 pre-college (not yet registered in the University, although intending to do so), and 29 individuals not intending to register in the University. As might be expected, a little more than half of the Bureau's cases are freshmen who are confronted with the problem of vocational choice; an additional large number are sophomores who face the problem of choosing a major subject. It is to be expected that the Bureau, for the most part, will deal with students early in their college careers. Nevertheless, analysis of the cases of upper-classmen and even graduate students reveals a disturbing amount of vocational maladjustment. Presumably such maladjustment might have been prevented had this testing and counseling service been available at the time they enrolled in the University.

The majority of our clients come from the Arts and General Colleges, presumably because these two colleges enroll the greater number of under-

classmen; another possible explanation is found in the fact that these two colleges have well-developed programs of counseling. The General College in particular is applying counseling and testing methods to most of its students. In this connection it should be stated that the experiences of the Bureau indicate that an appreciable number of under-classmen enroll in the technical colleges with insufficient consideration of the adequacy of their educational background and professional possibilities; many of these students voluntarily have sought aid of the Bureau.

Although not all of the 604 cases have been completed at the present time (January, 1933), 431 students were interviewed and counseled by December 31. In addition to these interviews a total of 1,405 professional interest and aptitude tests were administered. A transcript of college grades was secured for 97 students who have been in residence in the University for one quarter, and reports regarding physical health were secured for 27 students. Subsequent to this testing and interviewing, 254 written reports, including a profile of tests and a diagnosis of the vocational and educational problems, were sent to faculty members and administrators referring the students, and to other individuals for follow-up studies.

A question should be raised as to the type of students tested by the Bureau. Are there more students of low scholastic possibilities requesting the services, or are they distributed over the whole range of aptitude? The answer is found in the following distribution of cases on the basis of the Minnesota College Aptitude Test: there were 177

students whose percentile rank was between 1 and 25; 122 between 26 and 50; 110 between 51 and 75; 123 between 76 and 100; and 72 for whom no percentile rank was available at the time of the first contact. It is apparent, therefore, that vocational and educational problems are not confined to students of low aptitude. It must be kept in mind that the Bureau was not organized to aid only those students who show low possibilities for college work. It is the consensus of opinion of personnel workers in colleges that bright students have as many problems as poor students. The Bureau proposes, therefore, to assist college administrators with the difficult problem of evaluating the professional possibilities of both low and high aptitude students, and attempting to discover professional possibilities for them. But it should be understood that the Bureau provides an important service in helping the University discharge its responsibility to low aptitude students by more than the liberal use of admonitions and probation status. The fact that probation advisers are increasing their requests for the Bureau's services has already done much to overcome the attitude of parents that the University is not interested in its failing students.

The following case is given to illustrate the fact that vocational orientation involves extensive knowledge of the student's background, his achievement, and the immediate emotional and motivating facts which are operating. (See figure 1 for test profile.)

PETER SMITH. This boy had much better than average academic aptitude as indicated by his College Aptitude Rating of 71,

American Council Thurstone Test of 64, and English Test of 83. His professional interests as indicated by Strong's Test are remarkably concentrated in the field of Journalism and Advertising. At the time he was tested by the Bureau he was on probation because of low grades, and had been warned that he must improve. The probation adviser, instead of being satisfied with a mere warning, had attempted to rehabilitate him by sending him to the Bureau for advice. An exhaustive study of the case indicated that during the preceding quarter this boy had a severe slump in motivation due to three factors: a visit to his mother who had been institutionalized for psychotic maladjustments; a severe emotional upheaval occasioned by the breaking of his engagement to a girl; and a two weeks hospitalization for stomach ulcers. These factors coming at about the same time had so shaken his self-confidence that he could not use his native ability. The coöperative comprehensive tests show that, despite his low grades, he had a very superior fund of information in all fields tested, including English Literature, Fine Arts, Social Sciences and General Sciences. All these factors were interpreted to the chairman of the Journalism Department and a plea was made that Mr. Smith be given an opportunity to try himself out in advanced Journalism courses with the expectation of professional work in Journalism and Advertising. The chairman responded to this recommendation and by encouragement and special consideration succeeded in overcoming these emotional handicaps and in motivating Mr. Smith professionally. Subsequent interviews have indicated remarkable change both in personality and in achievement. The problem here was one of salvaging a student of very good possibilities from academic disaster.

The use of the methods as outlined at the beginning of the report has yielded a fairly definite and at the same time elaborate picture of many of the factors which make for vocational or scholastic maladjustment and which

UNIVERSITY TESTING BUREAU

SUMMARY RECORDName Peter Smith

College _____

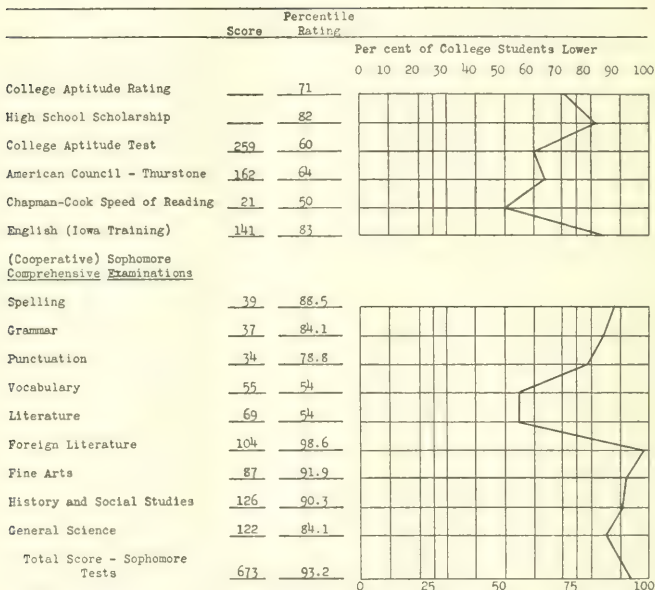
Age 23Year SophomoreSex MVocational Interests: Claimed AdvertisingTested Interests: A Newspaper Editor; Advertising Agency Man; B⁺ Lawyer;B Personnel Manager; B Y.M.Boy's Secretary;B Real Estate Salesman.

FIG. 1. TEST PROFILE OF PETER SMITH

allow of remedial treatment. The fact that these methods have made possible an understanding and adjustment of vocational problems is evidence of their validity. A list of the major factors in question follows:

1. Poor aptitude for chosen vocation or for college work.
2. Indecision about course sequences and vocational objectives.
3. High general aptitude paralleled by poor achievement.
4. Parental domination regarding vocational choice.
5. Fictitious idealization of a profession.
6. Fadism in vocational choice.
7. Marked inferiority in reading, writing, mathematics and study habits.
8. Outstanding aptitudes hampered by the standard curricula.
9. Sketchy, desultory and erroneous information regarding vocations and professions.
10. No industrial or commercial experience for vocational orientation.
11. Parental anxiety that a student make a wise vocational choice.
12. Vicious emotional disturbances.
13. Poor financial resources.
14. Over-anxiety to specialize too early in college career.
15. A dearth of interest in any vocation.
16. Vocational indecision because of possible marriage (girls): the disturbing effect of student marriages.
17. Inability to weigh aptitude, interest, and opportunity in relation to vocational choice.
18. Serious physical handicaps—speech defects, cardiac disorders, blindness, paralysis and loss of limbs.
19. Asocial personality traits which may prove a serious handicap despite high aptitude.
20. Fear of intellectual inadequacy despite high grades.

Is the Bureau's method of diagnosing and solving vocational problems valid? At the present time no adequate answer can be given to this question, although individual cases can be cited which seem to indicate a positive answer; but case histories

and clinical diagnoses can not be accepted as adequate evidence. The work of the Bureau should be and is organized in such a way as to collect data which may be analyzed subsequently to provide an answer to this question. This work should be organized on an experimental basis for a period of three years, and then the results carefully evaluated. The evaluation of the guidance work of the British National Institute of Industrial Psychology points the way. There are certain technical criticisms of the Institute's studies, but the method of controlled groups seems to be one of the best available. An additional method of validating the Bureau's work is found in the studies of A. B. Crawford, of Yale University, which suggest that a student having a serious vocational objective is motivated to achievement commensurate with his scholastic possibilities.¹⁹

Limitations of space permit only a brief summary of the special ways in which the Bureau acts as an advisory and service agency to various personnel activities of the University:

1. Testing and counseling of physically handicapped college students for the Division of Reeducation, State Department of Education.
2. Counseling students, without the required high school credits, who apply for entrance to the University by examination; advisory to the University Board of Admissions.
3. Special testing and counseling of students applying for transfer from one college to another within the University.

¹⁹ Crawford, A. B. *Incentives to Study*. Yale University Press, 1929, Chapt. VII.

4. Special testing and counseling for the University Speech Clinic of students with speech defects.
5. Vocational and educational testing of students for faculty counselors and advisers, college administrators, and probation officers.
6. Special testing and counseling of students petitioning for individual college curricula and independent study privileges.
7. Identifying and referring to the proper college counselor or personnel agency students in need of special socialization counsel.
8. Special testing of foreign students including the try-out of Dodd's International Group Mental Test; cooperating with the Board of Admissions and the International Relations Project Committee.
9. Scoring and statistical services for the Association of Minnesota Colleges' program of college aptitude testing of high school seniors.
10. Similar services for the Association's program of high school achievement testing.
11. Scoring and statistical services for the various colleges, e.g. correlation between college aptitude test and grades; comprehensive examinations for sophomores and seniors; comprehensive examinations for Arts College seniors applying for graduation with honors; validation of placement tests in English and German and other departments.
12. Administration of the Faculty-Student Contact Desk.¹¹
13. Coordination of vocational and educational guidance through a Committee on Vocational Information composed of representatives of all colleges of the University.

The chief difficulty encountered in this guidance and testing is the limited number of tests available for counseling students *before* they enroll in the University. An ideal program would be to expand the present state-wide testing of high school seniors by giving standardized achievement tests, such as the cooperative tests, to students in each year of the high school in all fundamental subjects of the curriculum; then to have these results recorded on Cumulative Records¹² and interpreted by trained high school counselors. Such a personnel program would undoubtedly result in a selection for college training of students who had not only superior academic possibilities, but serious intellectual interests and adequate study skills as well. These Cumulative Records would then be supplemented by additional examinations given at the time of entrance to college, such tests as Strong's Vocational Interest Blank. College counselors would then be in a better position to continue the counseling carried on in the high school, and to make certain that each student is working up to capacity in a particular vocational field wherein his interests would find satisfactory expression, and in which his capabilities would be adequately geared to the demands of the occupation. A very satisfactory beginning has been made toward the realization of this ideal program; the Association of Minnesota Colleges has been sponsoring high school senior

¹¹ This is a modification of the social worker's confidential exchange and is described in the Biennial Report of the President, University of Minnesota, Vol. XXXV, No. 64, 1932, pp. 200-202.

¹² Robertson, D. A. The American Council Cumulative Record Forms for Colleges and Secondary Schools. In College Admissions and Guidance. Reprint from *The Educational Record*, Dec. 1932, pp. 69-81.

testing for a number of years and is now offering to these same schools, at cost, the well-standardized and comparable examinations of the Cooperative Test Service. Educational leaders expect to achieve through such a program a more satisfactory guidance of students and a more adequate articulation of high school and college. When such a testing program is supplemented by intelligent counseling, then one may expect that the indi-

vidual student will not be lost sight of in the necessary group methods of instruction. The program of the Testing Bureau will then be largely one of administering and developing valid educational tests supplemented by vocational aptitude and interest tests; making these test results accessible to counselors and administrators; and counseling students not adequately taken care of by the ordinary methods of instruction and advising.

News Notes

GUIDANCE AND PERSONNEL CONVENTIONS AT CLEVELAND

Eight organizations interested in guidance or personnel management in the educational field met simultaneously in Cleveland, February 21 to 25, to hold annual or special conventions. They were:

- National Vocational Guidance Association
- American College Personnel Association
- National Association of Deans of Women
- National Association of Principals of Schools for Girls
- Teachers College Personnel Association
- Personnel Research Federation
- Southern Woman's Educational Alliance
- National Federation of Bureaus of Occupations

These organizations held separate meetings at which professional problems pertinent to each field were discussed, but in addition, the entire group assembled to discuss common problems. The joint meetings had been arranged by representatives of the associations on the National Occupational Conferences' Committee on Joint Planning, Walter V. Bingham, Chairman.

Members of all these organizations are faced with professional problems growing out of the profound and rapid changes—industrial, economic, educational, and governmental—of the present order. Therefore, on Thursday morning they assembled to discuss "Our Society in Crisis and Reconstruction." At this meeting Harvey N. Davis, President of Stevens Institute of Technology, outlined some of the recent trends and their significance for social progress. Arthur E. Bestor, President of the Chautauqua Institute, gave a splendid historical résumé of the activities of the Federal Emergency Education Pro-

gram. And Henry M. Busch, Director of Informal Adult Education, Cleveland College, pointed out the social objectives of guidance programs. After these broad surveys, the problems were placed in a concrete setting at the noon luncheon when the topic discussed was "Our Community Responsibility for the Adjustment of Persons." At this meeting short descriptions were given of the following programs in operation: Public Employment Center of Rochester; Women's Occupational Bureau of Minneapolis; State Employment Office at Philadelphia; Adjustment Service of New York.

The program of the 19th annual convention of the *National Vocational Guidance Association* opened Wednesday afternoon with an inventory of the association as of 1934. The evening panel discussion on "The Aims of Our Association" launched the association into more turbulent waters. Harry D. Kitson spoke on "Deflating Vocational Guidance," and Grayson Kefauver elicited heated discussion from the floor concerning the distinction between general and particular forms of guidance.

On Thursday afternoon six group conferences were held to discuss the following "live sectors of social reconstruction related to guidance": National Reemployment Program, Collectivization of Industry, Renaissance of Rural Life, Reeducation of the Adult Citizen, Redemption of Leisure, Conflict of Proposed Social Programs.

The fourth general session reached another high point when Meredith B. Givens of the Social Science Research Council discussed "Can Disturbing Trends Be Modified," and Dr. Bingham challenged the audience with the question "Can the Absorptive Capacity of Occupations be Predicted?" This was followed by a panel discussion: "Is Planned Distribution Feasible?"

Friday was given over to discussion of "Our Profession." The Friday program, on "Our Profession," was opened by a panel discussion of two cases. This served as the springboard for smaller group conferences. Evaluation was the theme of the afternoon session, and again opportunity was provided for small group conferences on various functions of guidance.

Professional standards were discussed at the evening session. A syllabus which had been worked out by a number of small committees formed the basis for a panel discussion.

In an interesting meeting on general placement, held by the *American College Personnel Association*, Donald S. Bridgman and Betsey Campbell took the employer's point of view, while Clyde R. Miller discussed ways in which to arouse the interest of Government officials in the problem of unemployed college graduates.

Other important topics covered by this association were: personnel counseling, records and research, and educational counseling and administration. Teacher placement claimed a large share of attention on Saturday and Sunday.

The Personnel Research Federation united with the American College Personnel Association in a luncheon meeting to consider the alleged over-population of the colleges. The principal address was given by Robert L. Kelly of the Association of American Colleges. This was followed by a session on records and research at which reports were submitted from seventeen institutions. This session was planned to inform the delegates of researches in progress, little time being available in which to present results. Some of the projects reported with greatest frequency were those connected with refinements in the basis of admission, follow-up of graduates placed, and standardization of record-keeping procedures.

Major topics discussed by the *National Association of Deans of Women* were "The Emergency in Education" and "The Outlook for Trained Women." Discussion groups were organized on high school, teachers college, and college and university levels. The meetings of this group

were planned around the following themes: social changes, financial crisis, fraternal changes, academic trends, religious crises, vocational adjustment. Each person was requested to remain with one of these groups for a three hour period.

The meeting of the *Teachers College Personnel Association* considered chiefly the progress made in a research on student testing carried on cooperatively by some forty teachers colleges under the leadership of J. D. Hailman.

Coöperation

The eight organizations met for a joint luncheon on Saturday noon to bring together the threads from the various group meetings and to discuss "Joint Planning For the Future." A challenging message was delivered by Commissioner George Zook of the U. S. Office of Education. A representative of each group summarized the deliberation of the separate organizations and made suggestions for the future.

Thyrza Amos of the University of Pittsburgh, representing the National Association of Deans of Women, appraised the quality of the addresses which had been delivered at their convention, and also their experiment with group conferences and discussions. As for the future, they hope that there would be continued coöperation among these various organizations and that this coöperation might be based on a common philosophy.

Katharine Woodruff, speaking on behalf of the National Federation of Bureaus of Occupation, described the set-up of her organization and pointed out that it followed-up the persons who had already been counseled in the schools. She issued a plea for adult guidance.

Susan Ginn, President of the National Vocational Guidance Association, reported that this association had decided to appoint a committee to study and reformulate the "Principles of Vocational Guidance," last revised in 1931; that the association wished to undertake the task of defining standards for professional workers, including selection, training and certification; and that it expected to take steps looking toward the production of better trained professional

workers in vocational guidance. She reported also that they favored a continuation of efforts looking toward coordination between various organizations interested in guidance and personnel; and that the National Vocational Guidance Association should stimulate the development of the United States Employment Service in states not now cooperating. The association recommended that local branches work cooperatively with local public employment offices toward maintaining high standards of counseling and placement, and that one issue of *Occupations, the Vocational Guidance Magazine*, be devoted to the topic of "Criteria of Occupational Success."

At the conclusion of this good-will session, Karl M. Cowdery, president of the American College Personnel Association, proposed the organization of a Council on Guidance and Personnel Associations which should look toward a more effective integration of the aims and activities of the various associations. On motion of Harry D. Kitson, the meeting voted its approval of this objective.

Several of the cooperating agencies have already designated representatives to act on their behalf in setting up the proposed council, as follows: American College Personnel Association, K. M. Cowdery and Esther Lloyd-Jones, alternate; National Association of Deans of Women, Thyrsa W. Amos and Sarah M. Sturtevant, alternate; National Federation of Bureaus of Occupations, Katherine Woodruff; National Vocational Guidance Association, Susan J. Ginn and Harry D. Kitson; Personnel Research Federation, Henry Bruere and Walter V. Bingham; Southern Woman's Educational Alliance, O. Latham Hatcher; Teachers College Personnel Association, George W. Frasier and M. Ernest Townsend.

This movement toward collaboration of associations concerned with educational and vocational guidance and occupational adjustment has been a gradual outgrowth of efforts initiated nine years ago when the Deans and Advisers of Men first met jointly with the Personnel Research Federation in Minneapolis.

ROY N. ANDERSON.

EIGHTH INTERNATIONAL CONGRESS OF TECHNOPSYCHOLOGY

Word has been received by W. V. Bingham, American member of the governing board of the Conference Internationale de Psychotechnique, that the Eighth International Congress of Technopsychology, or Psychotechnics—Industrial Psychology as it is variously translated—will be held next September in Prague. This congress, originally planned for Vienna, has had to be twice postponed on account of difficulties in the international political situation. American psychologists who expect to be in Europe next September are asked to advise Dr. Bingham at 29 West Thirty-Ninth Street, New York, who will shortly have detailed information regarding precise dates and arrangements for this congress. Communications reporting recent technical researches or summarizing contributions made by American psychologists since the Moscow congress in 1931 will be considered for inclusion in the program. Psychologists not planning to attend are nevertheless invited to supply exhibits of newly standardized and validated examinations of general or special abilities, aptitudes, interests or attitudes, tables of norms, improved rating schedules, and similar psychotechnical documents representative of recent advances in technopsychology.

CORRESPONDENCE COURSES AND OCCUPATIONAL ADJUSTMENT

Commercial correspondence courses receive sharp criticism from Charles Bird and Donald G. Paterson in a recent bulletin from the University of Minnesota Employment Stabilization Research Institute. On the basis of data gathered from 294 men, employed and unemployed, these investigators conclude that such courses not only fail in many cases to benefit their students, but that they are actually contributing to the formation of an unhappy and maladjusted citizenry. In spite of a median cost of \$120 per course, 40 per cent of the group were found to have dropped out of courses before the end of the first year, and two-thirds by the end of the fifteenth month.

Moreover less than thirty per cent of the men had ever been engaged in an occupation designated by the name of their correspondence course. Such findings lead to the conclusion that the majority of individuals who undertake courses of this kind are attempting training far beyond their capacities of assimilation and that many of them could profit far more from specific training on the job or training related to the job. The bulletin is called *Commercial Correspondence Courses and Occupational Adjustments of Men*.

FEDERAL BOARD FOR VOCATIONAL EDUCATION

Harold L. Ickes, Secretary of the Department of the Interior, has officially ordered that the functions of the Federal Board for Vocational Education be transferred to the United States Office of Education. It is hoped thereby to bring about more efficient coordination of these two educational enterprises.

WOMEN AT WORK

Women at Work is the title of a recent pamphlet published by the Women's Bureau of the United States Department of Labor. In reviewing women's progress in industry during the past hundred years, the author points to two consistent factors: an oversupply of women for the jobs available, and lower wages for women than for men. The past century has definitely established the fact that women as well as men must work outside their homes for pay. The struggle to open for women occupational and educational opportunities has been carried through successfully for the most part. The great task which confronts both sexes alike at present is "a readjustment within the economic world that will allow every willing worker a job and security." Readers will appreciate the attractive format and readable type-face, so unusual for government publications.

PERSONNEL CONFERENCE FOR COLLEGE WOMEN

A Personnel Conference for College Women, held recently by the American Woman's Association, brought together more than a hundred personnel officers

from colleges, business and industry, and placement agencies.

Opinion was almost unanimous that there is little opportunity to-day for untrained, inexperienced women. Where they will get the necessary training was one of the problems left unsolved, though tentative suggestions concerning supplementary training were offered. How they can equip themselves to improve their chance of securing employment through whatever means can be developed was, however, rather thoroughly outlined.

1. They must realize that entering a career is a serious undertaking not a stop gap between campus and marriage; that a college degree assumes no special skill; that a college graduate must work with her office associates on a basis of equality; that advancement must necessarily be slow.
2. To be permanently employed, now, one must be prepared to offer a combination of skills. The secretary, for example, may have to know filing, bookkeeping or proof reading, or how to handle a switchboard.
3. That keenness, business judgment and ability to stand up under the pressure of hard work should be among one's major assets.
4. That the ability to make an intelligent approach to a problem, style sense, poise, ability to make contacts, ability to get along with people in an executive capacity, in short, a well-integrated personality, are essential.
5. That a knowledge of "the business arts," typing, stenography, bookkeeping and accounting, is an excellent entering wedge.
6. That one should have a definite idea of what one wants to do and some specific knowledge of the business in which one makes application for a job.

Responsibility for the fact that the college graduate today is not better prepared to enter an occupation is about equally distributed between education and in-

dustry, according to Conference speakers. The colleges do not keep in sufficiently close and continuous contact with business and industry to know what opportunities are developing and what special training and aptitudes are necessary for specific jobs. Business and industry do not define clearly enough for themselves just what training and tools they wish college graduates to possess for the work they have to offer. Nor do they make available through short-time or part-time jobs during the summer, opportunities for the college graduate to secure preliminary training in the fields they wish to enter.

SOLVING THE OCCUPATIONAL PROBLEM

At the Conference on Child Development, Care, and Training, held under the auspices of the Mooseheart Laboratory for Child Research, in Washington, from February 22 to 24, the nature of children was considered from many angles. One of the papers, read by C. A. Prosser, dealt with Vocational Adjustment at Mooseheart. Since Dr. Prosser is director of a vocational school, the William Hood Dunwoody Institute in Minneapolis, he spoke with a full knowledge of the difficulties involved, but expressed himself strongly in favor of the system in use at Mooseheart.

The problem of occupational training and placing is becoming more difficult every year. Owing to the constant changes in the industrial world, a boy or a girl cannot be crammed with useless facts, soon obsolete, about occupations if a job is not only to be gotten but held. A man may have to learn four or five trades in the course of fifteen or twenty years, sometimes even in a shorter time. Machinery, new inventions, and changing tastes, play havoc with the older, single tracked occupations, and throw thousands of men and women out of work at every turn. If these people are to get other jobs, they must have adaptability. These simple facts throw a new responsibility upon vocational schools; they must change their instruction according to the changes in industry, and, if possible, anticipate them. This can be done only by giving up the old idea of the fixity of trades and by equipping the young men and women with

plastic minds and hands so that they may readily adapt themselves to new conditions.

Dr. Prosser called this new attitude *developing the technique of vocational adjustment*. It implies putting the pupil through experiences in sampling and exploring occupations; in testing not so much his predilection for an occupation but his physical and mental fitness for it; in investigating whether it has a temporary vogue or permanent value, and whether it leads into a "blind alley" or has opportunities for development; in finally choosing an occupation with the determination to make a success of it; in selecting a suitable employer and "selling" oneself to him. This technique cannot be developed by preaching or fact peddling but only through well directed thinking and a clear analysis of all the available facts.

These various and numerous requisites are met more fully, according to Dr. Prosser, at Mooseheart than in any other school—private, public, custodial, or free. The children stay there a sufficient length of time—fifty per cent of the twelve to fourteen hundred boys and girls spend about eight years there, and twenty-five per cent from twelve to fifteen years—to be studied and tested from every angle. The physical and psychological examination on admittance forms only the basis for periodic later tests. In the lower grades of school the attempt is made to find out what particular ability a boy or girl may have, not only in the schoolroom but on the playground. That ability is fostered and leadership along that line encouraged. When the junior high school is reached, each boy and girl is made familiar, not so much by teaching as by action, with several related groups of occupations, so that he or she can test both the predilection and fitness for one group or another. In high school a definite choice of one occupation must be made, for girls a choice out of twenty-two, and for boys out of twenty-five; a number of hours is spent every week day at this pursuit, and the summer between the junior and the senior year is devoted entirely to it. The articles produced are not toy affairs, but regular products either for use at Mooseheart or for sale in the market. Underlying this ac-

quisition of manual skill, is the scientific basis not only for industry in general but for each group of occupations in particular. The pupil not only learns the manipulations but the reasons for them. This double training provides a larger and more intelligent grasp of all the implications of the occupation and makes transition from one trade to another easier. The emphasis at Mooseheart, whether in shop, at play, or in school, is placed on the development of initiative and adaptability. This is one reason why its eight hundred graduates have done very well in life.

RUDOLF M. BINDER.

PERSONAL ITEMS

Arthur H. Young has resigned his post as Secretary of the Industrial Relations Counselors, Inc., to become Vice President

in charge of industrial relations, United States Steel Corporation.

Leonard D. White, Professor of Political Science, University of Chicago, has been appointed to the United States Civil Service Commission, to succeed Thomas E. Campbell. It is notable that the administration has selected for this post a man who for many years has specialized in the field of public personnel administration.

M. Ernest Townsend, Principal of the New Jersey State Normal School and prominent member of the Personnel Research Federation, has been appointed by the American Council on Education to its "Exploratory Committee on the Relation of Emotion to the Educational Process." The work of the Committee will be financed by a grant of \$5,000 a year for two years from the Josiah Macy Junior Foundation.

Personnel Books

EDITED BY O. MILTON HALL

THE HUMAN PROBLEMS OF AN INDUSTRIAL CIVILIZATION

By Elton Mayo. New York: The Macmillan Company, 1933, 194 pp. \$2.00

Reviewed by EDWARD S. COWDRICK, *New York*

Professor Mayo's admirable little book suffers injustice from its over-ambitious title. A reader looking for a comprehensive treatise is likely to be disappointed in this brief collection of lectures devoted mainly to an intensive treatment of a few subjects. The author has drawn heavily upon the experience of himself and his associates in the industrial research laboratories of the Harvard Graduate School of Business Administration and in the Hawthorne Works of the Western Electric Company, and the most valuable parts of the book are those dealing concretely with the experiments there conducted. No attempt is made to cover broadly the whole field of human relationships in industry, although in the final chapters Dr. Mayo sets forth some challenging theories on governmental and business administration.

After two chapters on fatigue and monotony, the author describes in some detail the Hawthorne experiments which began in 1926 and which led to the widely known "interview" method of learning employees' reactions to their working conditions. The Hawthorne studies began with a series of controlled experiments in which a "test room" group of workers was observed under various changes in hours, rest periods, lunches, and methods of supervision. The results convinced the company management that the quality of supervision furnished the key to labor administration. Largely as a means of improving supervision, the interview system was adopted.

The Hawthorne story already has been

told. Dr. Mayo, however, supplies numerous details heretofore unpublished. He also reveals than an intensive checking up and analysis of results is still in progress.

Observers of the test room group experiment at first were baffled by the fact that variations in output bore little relationship to changes in physical conditions. "The most significant change that the Western Electric Company introduced into its test room bore only a casual relation to the experimental changes. What the company actually did for the group was to reconstruct entirely its whole industrial situation. . . . Once the new orientation had been established, it became proof against the minor experimental changes."

It became evident that something deeper than changes in physical surroundings was at work. The officers in charge of the experiment concluded that improvement in production "is not very directly related to the rest-pauses and other innovations. It reflects rather a freer and more pleasant working environment, a supervisor who is not regarded as a 'boss,' a 'higher morale.' In this situation the production of the group insensibly lifts, even though the girls are not aware that they are working faster. Many times over, the history sheets and other records show that in the opinion of the group all supervision has been removed."

Partly out of this conclusion grew the widely heralded interview process, in the course of which large numbers of employees were encouraged to talk freely and at length to trained interviewers. Here again the

results were not precisely what had been expected. Puzzling difficulties as to technique and as to the reliability of employees' statements soon were met. After much experimentation the interviewer group was "embarrassed by the fact that statements critical of material conditions were fairly reliable, statements critical of persons were not. It was clear that an easy dichotomy of truth or falsity as applied to statements made in interviews was of small value. The idea that one might construct from interview material an accurate picture of situations in the Works was frankly abandoned. The division became convinced that it was committed to the study of persons and the relations between persons. The interview must be considered as revealing a personality—its history, its attitudes, its merits and defects."

One suspects that the interviewing process was less valuable as a device of personnel administration than as a means of appraising employee psychology.

As to the fundamental factors that determine workers' efficiency, morale, and attitudes, Dr. Mayo's conclusions in many respects parallel those of Rexford B. Hersey.¹ The two investigators, working by different methods and toward different ends, appear to have established independently that the dominant factors in shop relationships are not those most emphasized in conventional treatments of industrial relations. Collective bargaining, pensions, insurance, and investment facilities—even wages and hours—appear to have less influence upon the worker's state of mind than is exerted by home and family situations, physical conditions in the shop, and relationships with foremen and fellow employees. In each study the pre-eminent importance of capable supervision is conclusively demonstrated.

But a complete understanding of employee attitudes, in the opinion of Dr. Mayo, is not to be had through observation solely in the home and in the factory. He believes community standards and economic conditions also must be taken into account. "Just as our political and economic studies have for two hundred years tended to take account only of the economic functions involved in living, so also in our actual living we have inadvertently allowed pursuit of economic development to lead us into a condition of extensive social disintegration. . . . In the United States we have travelled rapidly and carelessly from . . . simple social and economic organization to a form of industrial organization which assumes that every participant will be a devotee of systematic economics and rigid logic. This unthinking assumption does not 'work' with us, it does not 'work' in Russia; it has never 'worked' in the whole course of human history. The industrial worker, whether capable of it or no, does not want to develop a blackboard logic which shall guide his method of life and work. What he wants is more nearly described as, first, a method of living in social relationship with other people and, second, as part of this an economic function for and value to the group. The whole of this most important aspect of human nature we have recklessly disregarded in our 'triumphant' industrial progress."

Professor Mayo for a number of years has been a leader in the psychological and biological approach to personnel management, as distinguished from (or at least as strongly supplementing) the more conventional economic and engineering point of view. His work, like that of Professor Hersey, may well turn the thoughts of employers toward the importance of viewing labor problems in their broadest possible aspect and of enlisting for their solution the aid of all the sciences that can tell us anything about that most puzzling of all animals—*homo sapiens*.

¹ *Workers' Emotions in Shop and Home*. By Rexford B. Hersey. Reviewed in *Personnel Journal*, October, 1932.

TEN THOUSAND OUT OF WORK

By Ewan Clague and Webster Powell. Philadelphia: Univ. of Penn. Press, 1933, 188 pp. \$2.00

Reviewed by JOHN A. FITCH, *New York School of Social Work*

Since 1929 the chorus of voices asserting that unemployment is a personal affair and that "anyone who really wants a job can get one" has steadily grown more faint until now it has perhaps achieved total silence. Other equally hoary and fallacious notions are, however, still extant, such as the idea that the unemployed wage earner seeking relief has come to his necessitous condition through lack of thrift and that at any given time the unemployed are the drifters, or the inefficient.

It is a good thing, therefore, that these investigators have put down in print what they found out about persons employed at "made work" in Philadelphia in 1931. The number included in the study was limited and was taken from the work relief list of a single city but there is no reason to suppose that these workers differed materially from urban wage earners generally and it is clear that this study has meaning for industry and society generally and not for Philadelphia alone.

The study revealed a group of workers earning, when employed, rather more than the average. Weekly wages of 5500 white workers had ranged from \$29.00 to \$48.31 and of 2300 Negro workers from \$25.07 to \$32.25. The effect of education upon earning power appears to be suggested when the white workers are grouped according to educational achievement. Except for a few odd variations, earnings were regularly larger at each educational level than in the one below. This did not hold true for the colored workers whose earnings were about the same for all grades of educational progress, from no education at all to first year in high school. Indeed the 48 who had only completed the first grade earned more than any other group below second year high school and the lowest wages of all were received by those who had completed one year in college. The authors point out that lack of work oppor-

tunity for colored men is a factor in this result. The number of colored workers included in the higher educational levels is, however, so small as to make generalizations of doubtful validity. The median white worker had completed the seventh grade and was in the group earning an average of \$30.17. The median colored worker was the product of the 5th grade and had earned on the average, \$25.35.

They were an exceptionally stable lot of workers in the main. Half of the white workers had at some time held one job for over five years, 20 per cent for over ten years, and 117 had worked in the same plant for over 25 years. In the case of 50 per cent of the white workers, the longest job had also been the last job held. The record for tenure was lower for the colored workers but a large proportion of them had migrated to Philadelphia in recent years and had not had the same opportunity to develop a service record.

Stable, dependable workers, as this record shows them to be, yet less than half had savings to rely upon when unemployment came and these were usually quite insufficient. The average for the white workers who had savings was \$339, and the median was \$204. In the colored families the average was \$150 and the median \$86. These sums would help tide over a brief interruption, but for a long depression, as the authors point out, an effective savings account would have to amount to several thousand dollars per family. A few families had had savings ranging from \$1,000 up to one of \$6,700. Some of these had been wiped out by sickness in the family, others by bank failures. "One outstanding fact," the authors remark, "is the fact that these resources failed in the emergency, but not through causes which the family could either have foreseen or prevented."

The authors conclude that the individual

worker can do very little to solve his own problem of unemployment. Even faithful and efficient service will avail him little in a crisis. A second wage earner in the family is the best anchor to windward, though other social questions are raised when the additional worker is the mother of young children or a child still undeveloped physically or untrained.

Something is to be expected of the employer in the way of stabilization though this has its limitations. It may be reasonable, the authors suggest, to ask him to contribute to a fund from which benefits may be paid to unemployed workers. But unemployment insurance will not, they believe, tide the workers over a long period of unemployment and the problem must finally be grappled with by the community. The summary concludes:

"All the other findings of this study are of minor importance in comparison with the one outstanding fact, namely, that coöperative group action, planned in advance, is the only effective method of dealing with the problems of unemployment and destitution. Something can be accomplished by the individual action of the various parties involved (the worker, the family, industry). But there are clear and definite limits to what each or all of these can accomplish. In fact, it is only through community coördination that the full fruit of individual initiative can be obtained. The lesson for the community in this unemployment crisis is therefore, primarily, that intelligent planning is necessary, and secondly, that the community must be prepared to take any or all steps that the plans may call for."

CURRENT PROBLEMS OF UNEMPLOYMENT AND RECOVERY MEASURES IN OPERATION

Edited by Parker T. Moon. New York: Academy of Political Science, 1934, 108 pp. \$2.50

Reviewed by S. J. BRANDENBURG, Clark University

This symposium on problems of unemployment and of recovery is rather nicely balanced among academicians, business executives, and governmental administrators and councilors. Its cosmopolitanism is accentuated by the contributions from three eminent British leaders of progressive social thought and action.

The discussions range over a rather wide field. Part I, "Current Problems of Unemployment and Recovery Measures in Operation," presents the status of unemployment insurance in England and the United States; the recovery program in this country as a probable stabilizer of employment; and the codes (the cotton textile code is the particular one used for illustration), especially the limitations they impose on over-capacity and over-production, as the corner stone of stabilized employment in the future. "... uncontrolled over-capacity... is Public Enemy Number One."

Papers presented under Part II, "Scien-

tific Progress, the Shorter Week and Unemployment," cite the continuance of change and progress in all aspects of economic enterprise, and emphasize the necessity for proportionate social adjustments if we are to avoid recurrence of serious ills.

The addresses delivered at the annual dinner are assembled in Part III, "Long-Range Planning." These discussions serve emphatically to remind us how far and how fast we travelled on the road of social experimentation in the eight months following March 4, 1934. That some of the addresses need revision now (three months after they were delivered) indicates that our speed of travel has not diminished. The undertone of practically all the addresses and of the informal discussion is one of optimism: "... that when we have recovered, we should not forget the lessons that human reason and human sympathy alike press upon us now in this time of our visitation" (p. 107).

COMMON PROBLEMS IN GROUP GUIDANCE

By Richard D. Allen, Frances J. Stewart and Lester J. Schloerb. Introduction by Grayson N. Kefauver and Harold C. Hahn. New York: Inor Publishing Co., 1933, 186 pp.

Reviewed by ROY N. ANDERSON, *Teachers College, Columbia University*

The first volume in the Inor group-guidance series is a manual for counselors in secondary schools. It is the outgrowth of a committee appointed by the College Teachers of Guidance, of the National Vocational Guidance Association, to compile a list of the common problems of high school students. The contents are to be considered as material for a group-guidance course which will serve as an orientation course in what might be called the social sciences. The types of problems discussed are classified as follows: (1) common problems of secondary school students, (2) problems of personal and social relations, (3) self-measurement projects, (4) study of vocations on the senior high school level.

The book consists of a number of specific problems such as: "What are the special advantages and purposes of each elective subject?" "How can I develop a pleasing personality?" "How can I know which occupation to select?" "When should I change jobs?"

Each case is treated as follows:

1. Objectives: 2 or 3 statements classifying or outlining the problem
2. References for the committee
3. References for the student

4. Principal issues involved: several paragraphs, generally in question form, to bring out the various points of view

5. Suggested projects:

- a. Investigation of facts by individual or committee
- b. Methods of securing the opinion of others
- c. Possible individual or group action
- d. Self-measurement projects (generally referring you to Vol. III of the series)
- e. Cases for class discussion (referring to cross references in Vol. II of the series)

The appendix contains sample units from the group-guidance curriculum in the Providence Junior High Schools. There are also lists of suggested publications for a counselor's and a student's reference library.

This volume should prove a valuable hand book for school counselors. But one caution is necessary: some of the instruments suggested in the self-measurement projects should be used only by a psychologist or a counselor trained in these techniques.

INDIVIDUAL AND COLLECTIVE BARGAINING UNDER THE N.I.R.A.

National Industrial Conference Board, New York, 1933, 46 pp.

Reviewed by ORDWAY TEAD, *Harper and Brothers*

This useful study of the growth of collective dealings under the N.I.R.A. indicates that about sixty per cent of the company union plans now operating were adopted after the passage of the Act and around about forty per cent of the labor union agreements are similarly new. The sample studied included approximately 27 per cent of the estimated number of workers

in mining and manufacture, or about two and a half million workers. Of these around 900,000 were under company unions and nearly 200,000 under labor union agreements. Development in both directions is, of course, still taking place. And the growth of labor union membership, as this report points out, is inadequately suggested by the above figures. However, the extent of indi-

vidual bargaining is still great, and it can hardly be doubted that without further legal compulsion the company union will for some time remain the more popular form—at least from management's standpoint. Hence this study does well to emphasize that this form of joint dealing will retain its advantage "only by demonstrating that it provides the means for genuine collective bar-

gaining and that when employees choose this form they can secure just as serious consideration of their problems as they can through a labor union. The future of employee representation will depend on its ability to meet this test." These sentences should, if the study is to serve a constructive purpose, be italicized and broadcast by the Conference Board.

THE RATIONALIZATION MOVEMENT IN GERMAN INDUSTRY

By Robert A. Brady. Berkeley: University of California Press, 1933, 466 pp. \$5.00

Reviewed by S. J. BRANDENBURG, Clark University

The German nation, vanquished in war; stripped by her conquerors of a goodly part of her economic accumulations of the preceding half century; doomed, her conquerors believed, to a generation of economic servitude;—this nation, economically, politically and morally shattered, after a period of disastrous floundering, suddenly astonished the world by a remarkable "recovery." In a short five years beginning 1924, Germany's aggregate economic output almost reached pre-war levels.

Those who would know some of the magic back of this achievement should read this compact study of Rationalization. The work, it is true, is primarily a study of an epoch which is closed; but, the author maintains, that structure brought to perfection in a bygone epoch is carried over practically unchanged to become the economic cornerstone of the present regime; hence in addition to its historical character, the work has pertinence as an indicator of economic direction in the Germany of the immediate future.

Part I, "Elements and Organization of German Rationalization," describes first the set-up and methods for integrated scientific research, and the application of scientific findings in the economic order. In modern Germany we are reminded that scientific research underlies standardization, which, in turn makes possible mass production and the economies that come from specialization of plants and machinery. The German idea maintains that standards "must be co-opera-

tively developed, scientifically correct, and socially oriented." (p. 32)

"Scientific management means science in management;" and it broadens inevitably into economic planning with the objective of a high level of productivity, equitable distribution, personal economic security, and general economic stability. Similarly it is the fostering union of two ideas—"universal application of scientific methods and techniques, and co-operative effort in all phases of investigation, production, and distribution,—which, given social direction, constitutes . . ." rationalization. (p. 6)

Then follows Part II, (Chapters V–XI) a study of the "Evolution and Problems of . . . Rationalization . . . in Selected Industries," viz., coal, lignite and coke, iron and steel, machinery, electro-technical, power, chemical, etc. These chapters present a description and comparison of the techniques of production and organization in the several major fields in which German enterprise has been unusually successful. But we are reminded that "practically no branch of German economic activity has remained wholly unaffected by the post-war rationalization movement" (p. 288); also, that interesting changes have been "wrought in ways of living and in professional life as a result of attempts" to rationalize consumption and professional service.

To the non-industrialist, Part III, "The Incidence and Implications of Rationalization" (Chapters XII–XVI), is perhaps the most significant. Here the author considers

the impact of rationalization on the social order in general: its probable effect as a general stabilizing force in our economic order; its effect on labor and labor's reaction thereto; the changes induced in the functions of the state; and the imminent changes in the national culture as a whole. These changes are the more pertinent to present-day Americans, business executives as well as students, because of the many similarities and contrasts in methods, achievements and ideals, between German rationalization and our own many sided Recovery program. We may add that rationalization, even in

German hands, has not thus far been an unqualified success; and that even the most optimistic do not regard it as a social panacea.

An appendix describes concisely the organization and work of some important directing and scientific bodies, and sets forth in tabular and graphic form certain detailed data illustrative of the main body of the work.

Despite the author's heavy style and the printer's poor choice of type, the reviewer recommends this as a most useful book for 1934 America.

VOCATIONAL GUIDANCE IN ENGINEERING LINES. American Association of Engineers. Easton, Pa.: Mack Printing Co., 1933, 521 pp.

From studies conducted by American Association of Engineers and from general observations it is known that hundreds of those who enter upon the training program for engineering, and indeed many who complete this training, fall by the wayside. In an attempt to reduce the waste of time and money the Association has prepared this volume for use by aspiring students, parents, vocational counselors, librarians, and the faculties of engineering colleges.

The Editorial Committee consisting of J. A. L. Waddell, F. W. Skinner, and H. E. Wessman prepared a number of introductory chapters on such topics as The Engineering Profession, Engineering for Americans in the Foreign Land, and Vocational Guidance. Stuart Chase contributed a chapter entitled "Prometheus Enchained," and Dr. Harry D. Kitson, one on "Ascertaining Mental Capacity and Special Talents." The rest of the book is given over to fifty different branches of engineering, each chapter being written by a specialist in that field. Did you ever hear of Ceramic Engineering? Illuminating Engineering? Port Engineer? Valuation Engineer?

The chapter on Ceramic Engineering, for example, discusses the following: An enumeration of the products manufactured; types of men required in this field; best preparatory training (22 colleges and universities in the United States and Canada have

inaugurated departments of Ceramic Engineering); special technical courses; responsibility in practicing Ceramic Engineering.

The book is very readable and well illustrated. It should be indispensable to the counselor in high school or college.

CHOOSING AN OCCUPATION. By Samuel H. Ziegler and Helen Jaquette Wildes. Philadelphia; Winston, 1933, 344 pp.

This book has been found to be very useful as a general text in the class in occupations. The first printing appeared in 1924 but in the past decade many new techniques have been developed for use in the class in occupations which fail to receive recognition in this revision. Changes in occupations also have been disregarded. In the chapter on Transportation, for example, nothing is mentioned about the field of aviation. Even the 1920 census figures are quoted rather than the 1930 figures. Except as a reprint to fill orders, the book has not new value.

MENTAL HYGIENE IN THE COMMUNITY. By Clara Bassett. New York: Macmillan, 1934, 394 pp., \$3.50.

Here is another work to swell the rapidly growing literature on mental hygiene. Miss Bassett herself states that she has produced no new material in connection with any of the problems discussed, her aim having been rather to integrate data already available. Evaluated on such a basis, *Mental Hygiene in the Community* is undoubtedly an excellent book; yet the material which it

covers has been presented and integrated so many times before that it is quite familiar.

Medicine, nursing, social service, the law, parenthood, education, the church, industry, recreation, and psychiatric institutions are considered one by one. The conclusion in practically every instance is the same; namely, that a more extensive application of the principles and methods of mental hygiene is sorely needed in that particular field.

For the beginning student or the lay reader desiring a bird's eye view of mental hygiene, no better work than this could be recommended. Psychologists and others with more specialized backgrounds, however, will find little in it that is new.

PSYCHOLOGY. By Frederick H. Lund. New York: Ronald, 1933, 475 pp., \$3.00.

This general psychology text is empirical and objective in its point of view. Concepts which imply special spheres of mental or psychic activity—distinct from organic or physiological processes—have been ignored or given only such consideration as might seem necessary in order to establish the empirical or biological viewpoint. The author has taken great pains to fit his book to the needs of beginning students. A good deal of recent experimental material is included.

GENETIC PSYCHOLOGY. By A. R. Gilliland. New York: Ronald, 1933, 351 pp., \$3.25.

This volume fills an empty place on the psychological bookshelf, for it is the first thoroughgoing psychology from the evolutionary viewpoint. The developmental emphasis is a healthy one. There is no reason why the book should not be used as an elementary text, although it will probably find greater favor as collateral reading.

AN EXPERIMENTAL STUDY OF REWARDS. By Edward L. Thorndike and Staff of the Division of Psychology, Institute of Educational Research, Teachers College. New York: Bureau of Publications, Teachers College, Columbia Univ., 1933, 72 pp., \$1.50.

The aim of the research described in this

monograph was to determine the nature of the after-effects of reward and punishment upon the learning process. Professor Thorndike who is known as a leading exponent of the theory that rewards act backwards to strengthen the connection between stimulus and learned response, has carried out further experiments in proof of his contention.

These experiments were run in a number of series and included many subjects. In one typical series the subjects responded to words by naming numbers from one to ten. For each "correct" response a small monetary reward was promised. Thus, with repetition of the series, the responses which at first represented pure guesswork on the part of the subjects, gradually took on the form of a learning process. By counting the number of times each incorrect response was repeated, the author shows that those which stood nearest to rewarded correct responses were repeated most. This led to the conclusion that rewards do act backwards to strengthen correct responses, and, to a lesser extent, incorrect responses when these are in close proximity to the rewarded responses.

Though highly suggestive as to the action of "satisfiers" on the learning process, Professor Thorndike's theory will itself undoubtedly fail to satisfy all students of the problem. The most obvious criticism is the fact that, with continued repetition, a point will finally be reached when all incorrect responses will disappear, leaving only the correct ones in each case. Such a fact will prove difficult to harmonize with the view that any incorrect responses are strengthened through the rewarding of other responses.

CHILD PSYCHOLOGY. By Arthur J. Jersild. New York: Prentice-Hall, 1933, 462 pp., \$3.00.

This "child psychology" will rank high among the many books on the subject. It is scientifically sound and comprehensive. Apparently intended for students of child psychology rather than as a manual for parents, the book nevertheless offers much to the more intelligent lay reader. The book in many ways resembles a general psychological text written from the developmental viewpoint.

ADOLESCENT PSYCHOLOGY. By A. H. Arlitt.
New York: American Book, 1933, 250 pp.,
\$2.25.

This text is designed especially for use in colleges and teachers colleges in their courses in education and in educational psychology. Parents of children in the 'teens and supervisors of young workers will also find it helpful. Discussions of personality and emotions are particularly well done.

AN OUTLINE OF GENERAL PSYCHOLOGY
(Revised Edition). By Robert H. Gault
and Delton T. Howard. New York:
Longmans, Green, 1933, 452 pp., \$2.80.

The authors have thoroughly revised this popular text, and brought it up to date with the inclusion of much recent experimental data. Terminology is consistent with the emphasis on psychology as a study of *activities*: perceiving replaces perception; imagining replaces imagination; remembering replaces memory. Chapters on the history of psychology and on applied psychology are distinctive features.

PERSONALITY IN POLITICS. By William B. Munro. New York: Macmillan, 121 pp.
\$1.60.

This is a timely and suggestive revision of an earlier study of the reformer, the boss, and the leader in politics. Professor Munro is a realist. His analysis of the politician suffers from no idealization. And since he first wrote, such different people as Jane Addams, Walter Lippmann and Lincoln Steffens have been prominent among those who have helped us to see ourselves politically as we are and to know why we are that way. There is no thesis being proved here unless it is that politicians are not such a bad sort, that they have inevitably been hamstrung by checks and balances under American conditions of democratic government, and

that on the whole they are tending to take on the rôle of leader more fully as time goes on. The emphasis upon the diverse personality traits which can manifest themselves in those who rise as leaders is a useful corrective to hasty generalization here.

THE YOUNG MAN IN FARMING. By Arthur K. Getman and Paul W. Chapman. New York: Wiley, 1933, 216 pp. \$1.75.

From the title of this book the young man might expect to find a treatise on the possibilities and opportunities in farming. But this is true for about only one-fourth of the volume. "The main purpose is," as the authors state, "to assist the individual in analyzing such questions, (What are the materials and forces of nature which I shall control? What must I be able to do as manager and operator? How prepare myself?), in terms of the purposes which you hope to accomplish in your career." In order to assist the individual to make this analysis, several chapters outline simply and succinctly the laws of learning. Several other chapters discuss economic laws and political situations.

The authors' ability to explain complicated and technical economic concepts might well be used in a class in elementary economics. But it is regrettable that they have fallen into the error of quoting unsound figures regarding the money value of an education.

As might be expected, the illustrations are drawn from agricultural situations. The book is written for the junior high school pupil and its style is simple and direct, with many good illustrations, graphs and charts. It should form a valuable part of the vocational counselor's library because it gives not only facts and information about farming but also a point of view and a methodology.

New Books

- A STUDENT'S DICTIONARY OF PSYCHOLOGICAL TERMS.** By Horace Bidwell English. New York: Harper, 1934, 138 pp., \$1.25
- ECONOMIC SURVEY OF MOTOR VEHICLE TRANSPORTATION IN THE UNITED STATES.** Washington, D. C.: Bureau of Railway Economics, 1933, 233 pp., apply
- HOME ROOM GUIDANCE.** By Harry Charles McKown. New York: McGraw-Hill, 1934, 468 pp., \$3.00
- INDIVIDUAL AND COLLECTIVE BARGAINING UNDER THE N.I.R.A.** New York: National Industrial Conference Board, 46 pp., \$1.00
- LABOR AND STEEL.** By Horace B. Davis. New York: International Publishers, 1933, 304 pp., \$2.00
- LABOR AND THE NEW DEAL.** By Emanuel Stein, and others. New York: Crofts, 95 pp., \$.75
- MAKE YOUR OWN JOB: Opportunities in Unusual Vocations.** By Violet Ryder and H. B. Doust. New York: H. W. Wilson, 1933, 217 pp., \$2.00
- OUR ECONOMIC SOCIETY AND ITS PROBLEMS.** By Rexford G. Tugwell and Howard C. Hill. New York: Harcourt, 1934, 575 pp., \$2.50
- PLANNING YOUR FUTURE: An Occupational Text for Junior High School Grades.** By George E. Myers, and others. New York: McGraw-Hill, 433 pp., \$1.50
- PRODUCTION TRENDS IN THE UNITED STATES SINCE 1870.** By Arthur F. Burns. New York: National Bureau of Economic Research, 363 pp., \$3.50
- SOCIAL PSYCHOLOGY.** By Abraham Myerson. New York: Prentice-Hall, 1934, 640 pp., \$3.50
- STRATEGIC FACTORS IN BUSINESS CYCLES.** By John Maurice Clark. New York: National Bureau of Economic Research, 238 pp., \$1.50
- WOMEN AND WEALTH.** By Mary Sydney Branch. Chicago: University of Chicago Press, 1934, 170 pp., \$2.00

Current Periodicals

PREPARED BY LINDA H. MORLEY, *Industrial Relations Counselors, Inc.*

BUDGETS AND COST OF LIVING

International Labour Office. Recent family budget enquiries. *International Labour Review*, Nov., 1933, vol. 28 p. 635-672.

"This article indicates the principal limitations to international comparisons (between budgets) caused by differences in method, date and scope. The chief data on family income are then summarized, followed by an analysis of expenditure subdivided into its main groups. Finally some suggestions are offered as to desirable improvements in the scope and methods of future enquiries."

"List of sources," p. 671-672.

COLUMBIA CONSERVE COMPANY

EDDY, SHERWOOD, JEROME DAVIS, PAUL H. DOUGLAS AND JAMES MYERS. Industrial relations of the Columbia Conserve Company. *Information Service*, Dec. 23, 1933, vol. 12, p. 1-4.

Describes recent developments in a company well known for its unique plan of worker-management coöperation, and the events leading up to the present curtailment of the plan.

EXECUTIVES

DONALD, W. J. (Partner, James O. McKinsey & Co). Effective executive personnel organization. *Personnel*, Nov., 1933, vol. 10, p. 46-63.

Paper presented at a dinner held during the A.M.A. Personnel Conference at the Palmer House, Chicago, February 8, 1933. Mr. Donald concludes that there are at least eleven essentials of effective executive organization, and eight easily recognizable symptoms of poor organization. What these are is discussed in this interesting analysis of a rather neglected field.

HOURS OF WORK

Man hours worked as a measure of the relation between technical progress and employment. *Bulletin of the International Management Institute*, Oct., 1933, vol. 7, p. 148-150.

Extracts and tables from various papers by L. P. Alford and J. E. Hannum, submitted to Management Division of the American Society of Mechanical Engineers. Figures covering the years 1923-1931, collected from 110 industrial firms are analyzed by the Kmh (Kilo-man-hour) unit of measurement.

SLICHTER, SUMNER H. (Professor of Business Economics, Harvard University). Implications of the shorter hour movement. *Proceedings of the Academy of Political Science*, Jan., 1934, vol. 15, p. 431-443.

A thorough canvass of problems involved in reducing hours as a means of stimulating employment, especially as influenced by operation under NRA codes. The vital part played by wages in the movement is stressed, and many aspects of the problem needing intensive study are brought out.

INDUSTRIAL RELATIONS

LEISESON, DR. WILLIAM. Personnel problems raised by the present economic crisis. *Management Review*, Apr., 1933, vol. 22, p. 114-115.

Address before Personnel Club of New York, Feb. 24, 1933, in which emphasis is laid upon the undermining effect of the present management policy of hiring a man for personnel work who thinks like the higher executive, that is, in terms of profits, sales, etc., instead of thinking in terms of the human factor.

INSURANCE

COHN, FANNIA M. (Executive Secretary, Educational Department, International Ladies' Garment Workers' Union). Social responsibility. *Bulletin of the Taylor Society*, June, 1933, vol. 18, p. 67-68.

One of three papers on economic security presented at the December, 1932 meeting of the Taylor Society stating the reactions of an enthusiast for social change to questions raised in two previous papers: one by E. Hayden Hull on the responsibility of the individual for his own unemployment, the other by Ralph S. Westing on a plan for financial security for employees.

KULP, C. A., ed. (Ph.D.; Professor of Insurance, University of Pennsylvania). Social insurance. *Annals of the American Academy of Political and Social Science*, Nov., 1933, vol. 170, p. 1-140.

A survey of the present status of social insurance in the United States by seventeen authorities. The articles are grouped under the main divisions of unemployment insurance, pensions and health insurance. Under each of these topics are articles for and against the proposal, as well as descriptions of plans in operation.

INTERNATIONAL LABOR ORGANIZATION

Report of United States delegation at the International Labor Conference, June, 1933. *Monthly Labor Review*, Dec., 1933, vol. 37, p. 1290-1298.

This report summarizes the discussion at the Conference on the report of the Director of the International Labour Office; the forty-hour week; fee-charging employment agencies and social insurance. It gives the reactions of observers to the discussions, and to the Conference as a whole.

LABOR

LORWIN, LEWIS L. (Brookings Institution). What is the international labor problem? *Annals of the American Academy of Political and Social Science*, Nov., 1933, vol. 170, p. 143-145.

A brief general survey prepared for the Academy of World Economics, Washington, D. C. of the present state of international cooperation as it affects labor, with an indication of future trends as seen by the author.

LABOR LEGISLATION

American Association for Labor Legislation. Labor legislation of 1933. *American Labor Legislation Review*, Dec., 1933, vol. 23, p. 193-204.

"The labor laws enacted by the forty-three states, two territories and two insular possessions which held regular sessions and those that held special sessions, together with the labor laws enacted by Congress, are summarized in alphabetical order by states, with chapter references to the session law volumes." The arrangement under each state is by subject. This year's summary is not as complete as usual because of a number of states for which session law volumes are reported unavailable.

LABOR PRODUCTIVITY

ROYLANCE, WILLIAM G. (U. S. Department of Labor). Significance of non-mechanical factors in labor productivity and displacement. *Monthly Labor Review*, Nov., 1933, vol. 37, p. 1028-1038.

Among the factors discussed are: improvement of working conditions and the adjustment of working time; selection of personnel; synchronization of motion; improved cooperation; better arrangement of tools or machinery; the discovery and installation of improved processes; and the standardization of materials, processes, and finished products.

NATIONAL INDUSTRIAL RECOVERY ACT

Labor provisions of codes. *American Federationist*, Dec., 1933, vol. 40, p. 1316-1323.

This analysis is to be a continuing feature in this magazine. Each code is examined for hours, wages, industrial control and "other labor provisions." The effective date of the code is given.

OCCUPATIONS

EDWARDS, ALBA M. (Bureau of the Census). Social-economic grouping of the gainful workers of the United States. *Journal of the American Statistical Association*, Dec., 1933, vol. 28, p. 377-387.

Revision giving 1930 census figures of a similar classification made in 1917. Six groupings are used: professional persons; proprietors, managers and officials; clerks and kindred workers; skilled workers and foremen; semiskilled workers; unskilled workers.

United States. Labor Statistics Bureau. Occupational changes since 1850, as shown by census reports. *Monthly Labor Review*, Nov., 1933, vol. 37, p. 1017-1027.

New methods of doing work, increased mechanization of industry, and changing consumption habits, are shown to have led to the decline or death of certain trades and professions, and the birth and increase of others.

PRODUCTION

FLUX, A. W. Industrial productivity in Great Britain and the United States. *Quarterly Journal of Economics*, Nov., 1933, vol. 48, p. 1-38.

A comparison of the census of manufactures of the United Kingdom and the United States. Among the statistics given are: number of wage earners; wage bill; total employed; net output. These data are compared in various ways and for various years in thirteen different industries.

Two inferences are finally drawn; one to the effect that high wages coupled with efficiency, do not necessitate higher prices; the other, that increased productivity is not likely to be achieved fast enough to cause undue hardship to the population as a whole.

SAFETY

BALDWIN, CHARLES E. (United States Assistant Commissioner of Labor Statistics). Status of industrial safety codes and regulations in the various states.

Monthly Labor Review, Nov., 1933, vol. 37, p. 1103-1119.

A compilation showing the specific subjects covered by the safety regulations for industrial workers, 1933 in each of the states. Brief explanatory notes are included.

SALARIES

PAYNE, PHILIP M. Corporation salaries and bonuses in theory and in actual recent practice. *Annalist*, Nov. 10, 1933, vol. 42, p. 605-610.

An extensive study based on the existing literature, well documented. Many tables are shown giving figures for individual companies, trades, etc., and in some cases going back over a number of years.

STABILIZATION

HEARD, STEPHEN, AND ALAN F. BEEDE. Timing recovery from major business depressions. *Review of Economic Statistics*, Nov. 15, 1933, vol. 15, p. 192-200.

Certain factors in recovery from nine major depressions, beginning in 1878, have been studied by the authors of this article and conclusions reached which they feel will be helpful in future forecasting.

TRAINING EXECUTIVES

HALE, MERLE C. (Director of Personnel and Industrial Relations, General Motors Corp.). Do ideas flow freely through your organization? *National Safety News*, Nov. 1933, vol. 28, p. 11-14.

Through the analogy of electrical conductivity, and by the help of a number of charts, Mr. Hale shows the very real loss to firms in not providing adequate methods for getting the plans of executives translated into action by the workers responsible for carrying them out.

UNEMPLOYMENT

BECKMAN, R. O. Mental perils of unemployment. *Occupations, the Vocational Guidance Magazine*, Dec., 1933, vol. 12, p. 28-35.

The author describes the dangers to personality and character inherent in long periods of unemployment, explaining their mechanisms and effects, and how they may be avoided or overcome.

UNEMPLOYMENT INSURANCE

BEVERIDGE, WILLIAM H. (Director, London School of Economics). Lessons for the present from British experience with unemployment. *Proceedings of the Academy of Political Science*, Jan., 1934, vol. 15, p. 378-384.

An advocate of unemployment insur-

ance summarizes the outstanding points in the evolution of this system in Great Britain, and indicates for the United States the more obvious difficulties to be encountered in establishing such a system.

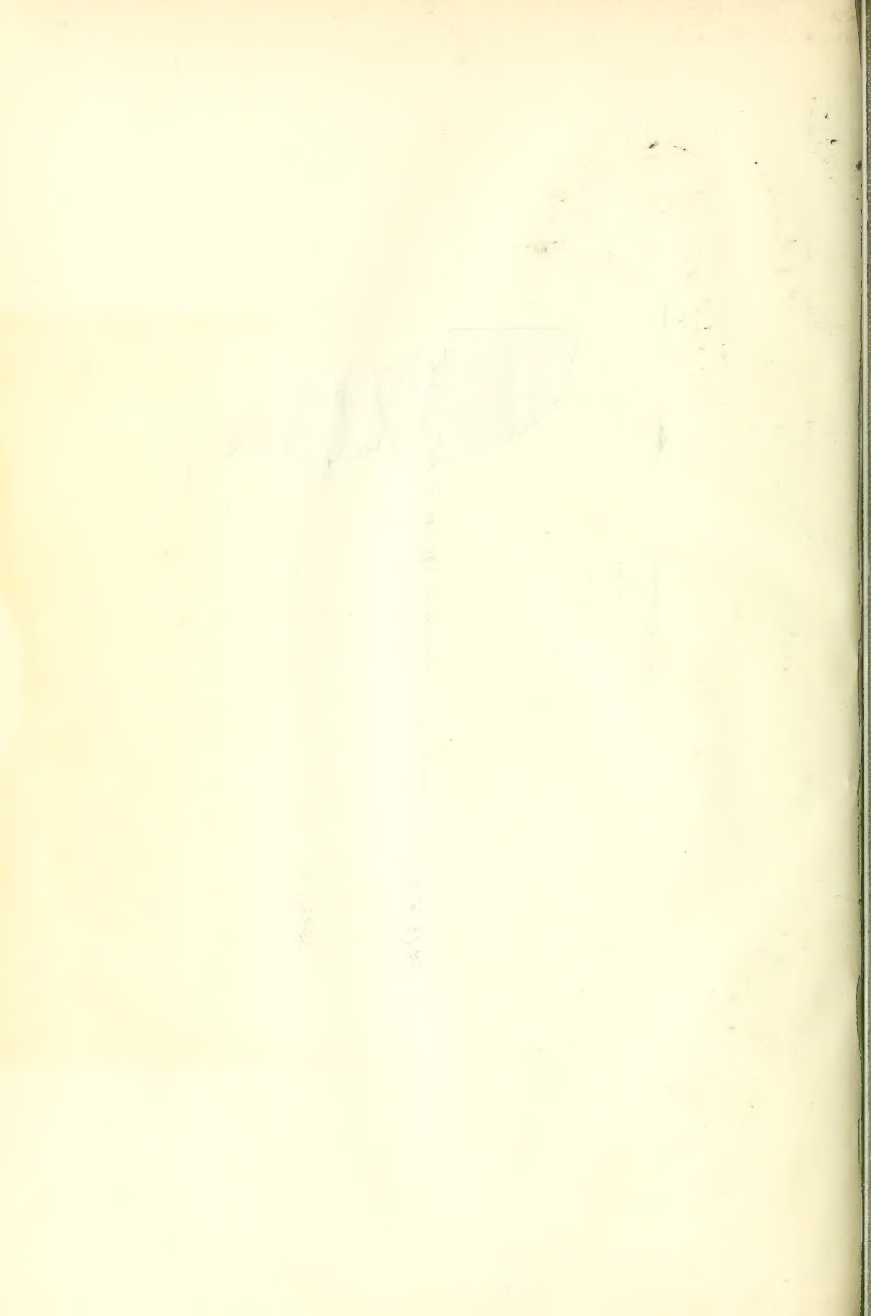
WEALTH

YNTEMA, DWIGHT B. Measures of the inequality in the personal distribution of wealth or income. *Journal of the American Statistical Association*, Dec., 1933, vol. 28, p. 423-433.

A highly technical description of statistical methods useful in obtaining data anent income distribution.







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